Naval Research Laboratory
Washington, DC 20375-5320

NRL/MR/6180--99-8412

U.S. Navy Halon 1211 Replacement Plan Part III — Halon 1211 Mission Critical Reserve Evaluation

D.P. VERDONIK
S.T. LARAMEE
P.J. DINENNO

Hughes Associates, Inc.
Baltimore, MD

F.W. WILLIAMS

Navy Technology Center for Safety and Survivability
Chemistry Division

November 1, 1999

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (*Leave Blank*)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	November 1, 1999	Interim Report — 1998

4. TITLE AND SUBTITLE

U.S. Navy Halon 1211 Replacement Plan Part III — Halon 1211 Mission Critical Reserve Evaluation

5. FUNDING NUMBERS

6. AUTHOR(S)

D.P. Verdonik,* S.T. Laramee,* P.J. DiNenno,* and F.W. Williams

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Naval Research Laboratory
Washington, DC 20375-5320

8. PERFORMING ORGANIZATION REPORT NUMBER

NRL/PU/6180--99-8412

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Naval Air Systems Command
Patuxent River, MD 20670

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

*Hughes Associates, Inc.
Baltimore, MD

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT (*Maximum 200 words*)

A review and analysis were performed on the reports and data available for Halon 1211 to determine the quantity of Halon 12311 available to the U.S. Navy/U.S. Marine Corps and to project the quantity required to support peace-time Crash, Fire, and Rescue operations. The total quantity of Halon 1211 available to the Navy/Marine Corps is estimated to be approximately 2,000,000 pounds. This quantity includes the 450,000 pounds of Halon 1211 at the Reserve/Defense General Supply Richmond that are listed as Navy/ Marine Corps assets and the quantities on board ships (157,000 pounds), aircraft (1,000 pounds), and installed and stored at navy/ Marine Corps shore side facilities (1,400,000 pounds). The projection for the quantity of Halon 1211 required for the Navy/Marine Corps was estimated by two different methods. The usage rate based on quantities reported in the fire incident data is estimated to be 35,000 pounds of Halon 1211 per year. The usage rate based on the data of shipments from the Reserve is estimated and prove-out of Halon 1211 alternative systems, the historical usage rate is projected to be adequate to supply peace-time quantities of Halon 1211 for approximately 4-13 years.

14. SUBJECT TERMS

Halon 1211	Aviation firefighting	Halon Reserve
Halon alternatives	Firefighting agents	
Crash, fire and rescue (CFR)	Halon Bank	

15. NUMBER OF PAGES

115

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std 239-18
298-102

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U.S. NAVY HALON 1211 REPLACEMENT PLAN
Part III - Halon 1211 Mission Critical Reserve Evaluation

1.0 INTRODUCTION

1.1 Background

The U.S. Navy currently uses five firefighting agents for suppressing fires on flight lines and flight decks: water, Aqueous Film Forming Foam (AFFF), Halon 1211, potassium bicarbonate (PKP), and carbon dioxide (CO_2) [NATOPS, 1994]. While each of these agents is potentially effective for flammable liquids or other combustibles typically encountered on flight lines and flight decks, each has advantages or disadvantages for a particular application. AFFF and water are the primary agents while PKP, Halon 1211, and CO_2 are secondary agents used with the primary agent or alone. The secondary agent is used alone in those situations where the primary agent is not effective and cannot completely extinguish the fire. It is often used in combination with the primary agent when increased effectiveness is required. For example, while AFFF is very effective in fighting pool fires and providing cooling, it is limited in fighting three-dimensional and deep seated, hidden fires. The three secondary agents are better than AFFF in fighting three-dimensional fires and hidden fires but do not provide effective cooling or burnback protection.

An important distinction between the five agents is the potential for causing collateral damage or damage caused by the agent to hot metal surfaces, electronics, or avionics. Halon 1211 is recognized as the agent that will cause the least collateral damage. While Halon 1211 and CO_2 may, in some extreme circumstances, both be considered 'clean,' CO_2 may cause collateral damage due to thermal shock or static discharge. PKP and AFFF are not clean agents and may

Manuscript approved October 4, 1999.

cause considerable collateral damage. For this reason, Halon 1211 has become the agent of choice in many aviation firefighting applications. The ability to reduce or eliminate collateral damage has been thought to be particularly important for engine fires and internal electrical fires. The aircraft may be placed back into service more quickly and at a lower cost when solely Halon 1211 is used to extinguish the fire [Leonard et al., 1992].

Halon 1211 was not the first clean, halocarbon agent to be used for aviation firefighting. Chlorobromomethane (CB), also known as Halon 1011, was used by the U.S. Air Force (USAF) as a streaming agent as early as the 1970s for flight line firefighting. Halon 1011 demonstrated the ability to limit collateral damage; however, it had corrosion and toxicity properties that were less than ideal. In the late 1970s, the USAF sponsored testing of Halon 1211 as a replacement for Halon 1011 [Chambers, 1977]. Halon 1211 was shown to possess the same positive attribute in limiting collateral damage but was much less toxic and corrosive than Halon 1011. The USAF sponsored work and the experience with Halon 1211 in Europe led to the recommendation to replace Halon 1011 in flight line extinguishers [Novotny et al., 1975]. Although no definitive literature source has been found that delineates how the 150 pound capacity was determined, there is a fair amount of anecdotal information available [Chambers, 1977; Burns, 1996; Huston, 1996; Darwin 1996-1997].

1.2 Halon 1211 on Navy (Ground Based) Flight Line Applications

The Navy began to incorporate Halon 1211 into flight line firefighting as early as 1977 when Twin Agent Units (TAUs) with AFFF and Halon 1211 were purchased to replace TAUs with PKP [Rout, 1996-1997; NAVFAC, 1996]. Soon after, Halon 1211, 150 pound, wheeled flight line extinguishers were purchased by the Navy and Air Force. The 150 pound units are intended to provide for initial attack of fires by maintenance and operations crews. Halon 1211 was also placed within crash Fire Rescue (CFR) vehicles such as the P-19. The decision to require 500 pounds of Halon 1211 on CFR vehicles appears to be based on what would fit in available space rather than determining a precise quantity required to meet a particular fire threat.

Within military CFR vehicles 500 pounds was found to fit in the space previously used by PKP [Darwin, 1996-1997].

In 1982, the FAA performed tests to qualify Halon 1211 as an acceptable alternative to PKP as a secondary agent for flight line CFR operations. These tests proved that Halon 1211 performed adequately and was subsequently approved for use. The FAA also came across the same 500 pound requirement by a different route. It appears that the 500 pound criterion was derived from an analysis of how much agent could be carried by a standard ¾ ton pickup truck [Wright, 1995]. Although not derived from an evaluation of agent required to meet a particular fire threat, the 500 pound value has become the de-facto standard.

The National Fire Protection Association (NFPA) published the "Standard for Aircraft Rescue and Firefighting Services at Airports" in 1988 [NFPA 403, 1988]. Minimum extinguishing agent quantities and discharge rates were provided for the primary and secondary agents based on the airport category. Halon 1211 and PKP were given a one to one parity with respect to both agent quantities and discharge rates. There does not appear to have been any specific tests performed or referenced in the NFPA committee decision [Darwin, 1996-1997]. The latest, 1993, version of NFPA 403 provides the same requirements for PKP and Halon 1211 as the 1988 version [NFPA 403, 1993].

1.3 Halon 1211 on Flight Decks

Halon 1211 found its way to the flight deck of U.S. Naval vessels in the mid-1980s as a result of the crash of an EA-6B aircraft on the USS NIMITZ [Carhart et al., 1987]. AFFF, PKP and Halon 1211 were evaluated against a standard debris pile fire developed by the Naval Research Laboratory (NRL) to simulate the fire threat encountered on the USS NIMITZ, a pool fire with aircraft debris and running fuel (leak) fires. Based on the work performed by NRL, Halon 1211 was chosen as the secondary agent to AFFF for flight deck firefighting. The flight deck firefighting vehicle, the P-16, was retrofitted to provide 400 pounds of Halon 1211 in

addition to the on-board AFFF. As with the flight line CFR vehicles, the decision to require 400 pounds of Halon 1211 appears to be based on the space available within the P-16 vehicle [Darwin, 1996-1997].

1.4 Environmental Issues

During the same time period that the Navy was increasing its reliance on Halon 1211, the international environmental community was linking the use of chlorofluorocarbons (CFCs) and halons to the destruction of the stratospheric ozone layer. The first international agreement was the Vienna Convention for the Protection of the Ozone Layer, signed in 1985. The Vienna Convention requires signatories to take appropriate measures to comply with its provisions including all protocols in force to protect against human activities that modify the stratospheric ozone layer. The major protocol under the Vienna Convention is the Montreal Protocol on Substances that Deplete the Ozone Layer, signed in 1987. At present, there are 156 Parties to the Protocol. The Protocol has been amended twice, the first Amendments to the Protocol were enacted in 1990 during a meeting in London and are, hence, termed the London Amendments. In 1992, the Copenhagen Amendments were adopted. Under the Copenhagen Amendments, production of Halon 1211 ceased in the US (and the rest of the developed nations) on 1 January 1994.

In the US, the Protocol was ratified by the Senate in 1988. The status of the Protocol as an International Treaty means that it takes precedence over national law. For example, Title VI of the Clean Air Act Amendments of 1990 (CAAA) requires that the more stringent control measures listed within the CAAA or the Protocol must be followed; the Environmental Protection Agency (EPA) has the responsibility to administer the regulations to adjust the control measures to ensure, as a minimum, compliance with the Protocol.

1.5 Halon 1211 Use and Availability

As a consequence of the Montreal Protocol, the Navy and all other users of Halon 1211 must rely on, and share, the quantities of Halon 1211 currently in existence. Recent actions under the Montreal Protocol have been aimed at determining the quantities of halons required to meet fire protection needs versus the quantities available. Surpluses of Halon 1211 may be targeted for mandatory collection and destruction. These actions may serve to reduce further the long-term availability of Halon 1211.

Since 1993, the Department of Defense (DOD) has established a strategic reserve of Halon 1211 to supply the needs of the services in lieu of relying on production. The quantities of Halon 1211 purchased, in supply, and used were not tracked in the logistics system. Local purchases at dozens of locations hampered efforts to get precise data. Best estimates were developed to determine the quantities of Halon 1211 required for the Reserve [DDLA, undated (circa 1994)]. The major source of Halon 1211 to support the field has been the Reserve since 1993. With this main source of Halon 1211, the ability of the logistics community to track Halon 1211 issued to the field has been significantly increased. In addition, other military activities, government agencies and industry have been performing research, development, test and evaluation (RDT&E) to develop and prove-out technologies to replace Halon 1211. Recent changes within the Montreal Protocol, technology developments and availability of additional Halon 1211 logistics data provide both the need and opportunity to re-evaluate the continued use of Halon 1211.

A project directed at evaluating the continued reliance on Halon 1211 for aviation firefighting was developed. The work covered in the entire effort will be performed and reported in four parts: (1) Halon 1211 Alternative Development Status, (2) Halon 1211 Requirements Review, (3) Halon 1211 Mission Critical Reserve Evaluation, and (4) Halon 1211 Replacement Program Plan. The work covered in this report is for Part III – Halon 1211 Mission Critical Reserve Evaluation.

2.0 OBJECTIVE

The overall objective of this project is to provide a basis input for a detailed Halon 1211 Replacement Program Plan. The purpose of the program plan is to ensure that the Navy is adequately prepared to support aviation CFR operations on flight lines and flight decks through continued use of Halon 1211 and/or replacement technologies.

To meet the overall objective, the plan will be based on (1) an evaluation of the development and status of Halon 1211 replacement technologies; (2) an assessment and delineation of fire protection operational requirements that currently use Halon 1211; (3) quantification of the amount of Halon 1211 within the Navy, including the reserve, available to meet the requirements; (4) an estimation of the Halon 1211 needed to meet the fire protection requirements; and (5) assessment of policy and procedural changes that may be implemented to reduce the required Halon 1211. The work presented in this report covers item (3): quantification of the amount of Halon 1211 within the Navy, including the reserve, available to meet the requirements.

The objective for the work performed under Part III was to develop accurate data on (1) the quantities of Halon 1211 that are available and (2) the quantities of Halon 1211 that are required to support Navy and USMC aviation firefighting. The intent was to determine how long the Reserve could be relied upon to provide Halon 1211 and when an alternate/replacement agent will need to be fielded.

3.0 APPROACH

3.1 Drop-in Agent Approach

Two different approaches may be used to perform the re-evaluation of continued Halon 1211 use in developing the Replacement Plan. The first approach starts with the premise that

every application that currently uses Halon 1211 must continue to use a Halon 1211 like replacement with exact attributes and capabilities of Halon 1211. This is the so called 'drop-in' philosophy where the one new agent must work in all current Halon 1211 equipment without modification. The new drop-in agent would have all of the positive attributes of Halon 1211 but would not have the negative environmental impacts. It essentially defines the requirement as Halon 1211. It defines the purpose as replacing Halon 1211 and sets all of the performance objectives at those equal to Halon 1211. This approach limits the ability to create significant advances in technologies. The lure of the drop-in approach is that if it is successful there will be limited logistical and cost impacts. The major disadvantage is that if it is unsuccessful Halon 1211 will be the only agent available to meet the firefighting need. It has not been successful to date, following 12 years of research and development. A Naval Studies Board enpanelled to evaluate Halon 1301 replacements found that "It is unlikely that a drop-in replacement agent will be discovered that will exhibit all of the beneficial properties of halon 1301 and not also exhibit a significant environmental impact"[National Academy of Sciences, 1997]. It is likely that Halon 1211 would be found the same..

3.2 Systems Engineering Approach

The second approach starts with the premise that each application that currently uses Halon 1211 can be defined by a series of firefighting and related requirements. Instead of assuming that the requirement is to replace Halon 1211, it places the need at performing the required firefighting. It requires understanding and defining the firefighting requirements for each application. This philosophy places the emphasis on the systems engineering required to meet the threat and not solely on the agent itself. Tests need to be developed that adequately measure the ability of the system to meet the documented requirement. It requires a better understanding of the operational and technical requirements. The major advantage is that a wider range of technologies can be explored. This approach will also lead to a better understanding of the science and engineering involved, and enhances the ability to develop significant advances in technology.

Several organizations have shown great success with the systems engineering approach in resolving Halon 1301 applications. The Navy has proved out inert gas generators in the V-22 and F/A-18E/F, and the Army has proved out HFC-227 (FM-200™) in the RAH-66 for engine nacelle fire protection. CO_2 portables, water mist, and dry chemicals are all replacing Halon 1301 in various applications. HFC-236 has been commercialized as a 1211 replacement while CO_2 and dry chemicals are being used extensively in the private sector as Halon 1211 "replacements." All of these successful alternatives would have been eliminated from consideration using the drop-in approach. To date, no drop-in agent has been implemented in any fire protection application. Emphasis has been placed on the systems engineering approach in performing and reporting this work.

3.3 Assignment III – Halon 1211 Mission Critical Reserve Evaluation

3.3.1 Halon 1211 Quantities Available

A review and analysis was performed on the reports and data available for Halon 1211 from the logistics system. Additional information on the quantities of Halon 1211 installed shipboard and shore side was also collected and analyzed to determine the total quantity of Halon 1211 available for use by the Navy/USMC. The total amount is comprised of quantities in the strategic Reserve at the Defense Supply Center, Richmond (DSCR) that are listed as Navy/USMC assets, quantities on-board ships, and quantities installed and stored at Navy and USMC shore based facilities. The specific items to be addressed follows [Leach, 1996]:

- Develop stockpile quantities currently available for Naval (Navy/USMC) use,
- Coordinate with DLA, Richmond (DSCR) for Reserve quantities, and
- Include details of non-mission essential traffic.

3.3.2 Halon 1211 Usage Projections

A review and analysis of available data were performed to develop the historical Navy/USMC Halon 1211 peace-time usage rate. The usage rate was estimated based on two different sets of existing data: (1) shore side fire incident data covering the period 1977-1991 and 1993-1995; and (2) shipments of Halon 1211 to shore side and ship based activities covering the period January 1995 - June 1997. The projected peace-time usage rate from the Reserve was determined as a range resulting from both estimating methods. Conclusions drawn from Part I – Development of Halon 1211 Alternatives and Part II – Halon 1211 Requirements Review of this study indicated that the majority of the Halon 1211 systems currently fielded will remain in the system for the immediate future. Therefore, the usage projections were developed based on the assumption that the historical usage rate of Halon 1211 represents the projected usage for the immediate future.

The specific items to be addressed follows [Leach, 1996].

- Develop detailed Halon 1211 stockpile requirements;
- Identify all user hardware;
- Research historical usage rate, users and delivery patterns;
- Develop usage projections to include
  - "old" hardware retirement schedules,
  - new hardware purchase plans, and
  - recycling efficiency.

4.0 LOGISITICS AND REPORTING FOR HALON 1211

DSCR of the Defense Logistics Agency (DLA) is the central source and depository of Halon 1211 for the Department of Defense (DoD). The Halon 1211 managed by DSCR is called the Reserve. Sometimes the term, Reserve, is used synonymously with the term, "Bank."

However, there is an important distinction between these two terms. The Reserve of Halon 1211 does not represent the entire supply of Halon 1211 owned by, or available to the Navy (and USMC). The Reserve is only one component of the total Navy Halon Bank.

To describe the difference between the Bank and the Reserve, it is useful to use the analogy of a financial bank. All of the assets in a financial bank are not stored in the vault, ready to be issued to customers. While some assets are in the vault, the majority of the assets are "in-use," invested in car loans, mortgages, etc. For the Halon Bank, the Reserve is equivalent to the vault. It represents the quantity of halon assets that are available to be issued to the field. The rest of the Halon assets that comprise the Bank are in-use, invested in fire protection systems in CFR vehicles, flight line extinguishers, hand held extinguishers, and contained in bulk supply/ recycled containers. These in-use investments are located throughout the Navy and USMC, but they make up a significant part of the overall Bank of Halon 1211 available. For the purposes of this report, the term, Reserve, is limited to that portion of the Halon 1211 Bank that is managed by DSCR. The term, Bank, will be used to indicate the entire quantity of Halon 1211 in the Navy and USMC, including the Reserve.

4.1 Supply And Provisioning Process

The Naval Sea Systems Command (NAVSEA), Code 5090, has been directed by CNO (N451) to serve as the Navy manager of the Reserve of ozone-depleting substances (ODS) [Naval Sea Systems Command, 1996]. A Monitoring Plan was developed to include Halon 1211. The purpose of the monitoring plan is to (1) provide Navy oversight to ensure that only activities that are authorized have access to the Reserve, (2) track usage and availability to predict shortfalls and surpluses, and (3) provide feedback and information to Echelon II Commands and CNO (N451) on a routine basis. It was quickly realized that the Halon 1211 portion of the Reserve has not historically been tracked as well as the other portions of the Reserve. To assist in correcting the deficiencies with the Halon 1211 data, the Navy Inventory Control Point (NAVICP),

Mechanicsburg, PA was brought in to assist in the data collection. NAVSEA has contracted with Desmatics, Inc. to perform analyses of all of the data on a routine basis.

Only certain organizations/activities may withdraw Halon 1211 from the Reserve. Control is maintained through the Authorized Users List (AUL) [Naval Sea Systems Command, 1996]. NAVAIR is responsible for developing and updating the AUL for Halon 1211. The AUL is comprised of Unit Identifier Codes (UICs) for each organization authorized to requisition from the Reserve. The AUL is disseminated by NAVICP through their Technical Screening Expert System (TSES). TSES is used by DSCR and the Navy intermediate supply points to determine if the requisitioning UIC is on the AUL (i.e., to determine if the requisitioner is authorized to requisition Halon 1211 from the Reserve). The AUL from TSES, V1.7, release date June 95, is provided in Appendix A [Naval Supply Systems Command, 1995].

There are currently three sections of the AUL that affect Halon 1211. NAVSUP, NAVAIR, and the USMC provide UICs for Halon 1211 [Naval Supply Systems Command, 1995]. The NAVSUP section of the AUL includes Fleet Industrial Supply Centers (FISCs), Naval Air Stations (NASs), and Naval Stations (NSs). The activities listed are authorized to requisition 'all' ODSs in the Reserve. The NAVAIR list also authorizes organizations to requisition all ODSs in the Reserve. The NAVAIR list includes the NASs, Naval Air Fields (NAFs), Marine Corps Air Stations (MCASs), NSs, Naval Aviation Depots, CV/CVNs, LPHs, LHAs, LHDs, and several small specialized activities. The USMC list is specific to Halon 1211. MCASs, Marine Wing Support Squadrons and detachments are listed. There is overlap between the three lists, particularly with respect to the MCASs and NASs.

4.2 Reserve Reporting

DSCR provides monthly reports to CNO, Code: N-451 that covers all of the ODSs supplied out of the Reserve [USN, 1996-1997]. These monthly reports contain three main items

of importance to this study, the quantity of Halon 1211 (1) requisitioned by the field, (2) returned to the Reserve, and (3) the supplies available for issue to the field.

4.2.1 Issued to Field

For shipments to the field, the DSCR report contains two sections: (1) ODS Inventory Issues for 'month' and Summary ODS Inventory Issues Year to Date, and (2) Monthly ODS Requisitioner Report [USN, 1996-1997]. The second section, the Monthly ODS Requisitioner Report, includes specific information on who is requisitioning or trying to requisition from the Reserve. The items included in this report are (1) Product (Halon 1211), (2) Document Number, (3) NSN, (4) Quantity (cylinders), (5) Pounds Rejected, (6) Pounds Accepted, (7) Status Code, (8) Status Date, and (9) Address.

4.2.2 Returned to the Reserve

DSCR provides the quantity returned to the Reserve in the monthly ODS Accounting Report [USN, 1996-1997]. Part I Customer Returns by Service (Monthly, Yearly, and To Date) provides data on the following categories: (1) Product Name (Halon 1211), (2) Cylinder Size, (3) NSN, (4) Current Month (a) Cylinders Received and (b) Estimated Pounds, (5) Last 12 Months, (a) Cylinders Received and (b) Estimated Pounds, and (6) Since Jan 93, (a) Cylinders Received and (b) Estimated Pounds.

The data reported are limited to an estimate of the quantity of Halon received that is identified as 'owned' by the Navy/USMC [Sibley, 1996-1997]. The cylinder is not weighed when it is received. The reason is that it would be considerably more costly to do so. Therefore, a precise quantity of Halon 1211 in the received cylinder is not tracked or recorded. The estimate of the quantity received is based on 75 percent of the capacity of the cylinder. For example, a 150 pound Halon 1211 flight line extinguisher is expected to contain, on average, 112.5 pounds. This percentage is based on a composite value of all cylinders turned in to DSCR. The exact quantity

that was contained in the cylinder is never determined. Several cylinders are emptied at the same time for a batch recycling process. The total amount of Halon 1211 obtained from the batch recycling is recorded in the Available for Issues section of the DSCR monthly report.

The current tracking system does not record the specific unit or organization that returned the Halon [Sibley, 1996-1997]. The reason that this is not required is to make the process of returning the Halon to the Reserve as easy as possible for the field. DSCR does not require any more information than is necessary to determine ownership, i.e., Army, Navy/USMC, or USAF. The consequence of not tracking which organizations are returning the Halon 1211 is that there is no way to determine the usage of Halon 1211 in a particular organization. It is possible that a specific organization requisitioned a 1500 pound cylinder so that it may appear that their usage is 1500 pounds. However, this same organization may have returned more than 1500 pounds to DSCR for recycling. There is no way to track the returns by organization or exact quantity returned by an organization.

In analyzing the DSCR data, a question was raised on the returns of Halon 1211 when ships return to port. An easy method to measure the quantity of Halon (liquid) in the cylinder does not exist for the current 1500 pound Halon 1211 bulk cylinders. To better understand the returns of Halon 1211 to DSCR, NAVAIR requested that they provide a snap-shot analysis of the quantity of Halon 1211 contained in the returned 'bulk' cylinders. The purpose was to determine if the bulk cylinders were being returned partially full.

DSCR reported that for the period July 1996 through January 1997 they have received five 1500 pound Halon 1211 (1000 pound water capacity) coded as Navy [Sibley, 1996-1997]. All of these cylinders were essentially empty. A small residual amount of liquid and gas may have been present. DSCR also received thirty five 200 pound Halon 1211 (122 pound water capacity) cylinders during that same time. None of the 200 pound cylinders were empty. On average, these cylinders contained 75 percent of their capacity, but it was not possible to determine if the Halon 1211 was unused 'specification' material or recovered material in need of recycling. It was also

not possible to determine if these cylinders came from shore side or shipboard activities. It is more likely, however, that the 200 pound cylinders came from shore side activities. Since 1993 only ninety six 1500 pound Halon 1211 cylinders have been received by DSCR. This is significantly lower than DSCR expected.

While the data confirmed that partially filled cylinders are being returned to DSCR, it was not possible to determine which organization/activity returned these cylinders. It was, therefore, not possible to determine why partially full cylinders are being returned. Although not designed for this purpose, the data also confirmed that the assumed 75 percent for returns is a good average value.

4.2.3 Available for Issue

DSCR provides the supplies available for issue in the monthly ODS Accounting Report [USN, 1996-1997]. Part II, ODS Ready for Issue Product, covers the supplies that are available to the Navy/USMC to be issued to the field. The report includes (1) Product (Halon 1211), (2) Cylinder Size (pounds), (3) NSN, (4) Quantity on hand (cylinders), and (5) Total Pounds. It is important to note that this category does not include the estimated amount contained in cylinders that are awaiting recycling. The rationale is that it would not be prudent to indicate that an estimated amount received is actually available until it has been verified.

4.2.4 Analysis of Reserve Reporting

Although the data provided by DSCR may at first glance appear to be adequate to determine the organization that is using the Halon 1211, it is not. The inclusion of both intermediate supply points and end users on the AUL makes it impossible to determine the ultimate disposition of Halon 1211 using only the DSCR reports. It is not possible to determine the quantities used by a particular organization nor for a particular application, e.g., 150 pound

flight line extinguishers versus CFR vehicles. As such, the DSCR reports can only provide the aggregate amount of Halon 1211 issued to the field.

It was recognized that in order to determine the actual user of the Halon, additional data are needed on shipments from the intermediate supply points. It was reported that the NAVICP would begin to track the shipments from FISCs to the end-user in early FY97 [Mullenhard, 1996-1997]. On-hand quantities at the FISC will also be tracked to ensure that a material balance exists between DLA, the FISCs, and the end-users (i.e., quantities shipped from DSCR equals the quantity kept at the FISC plus the quantity shipped from the FISC to the end-user). (No data were available on the quantity of Halon 1211 at the FISCs as of 1 November 1997.) While, when performed, this will provide NAVAIR with information on aggregate usage of Halon 1211 from the Reserve, it does not account for use from on-hand supplies, particularly at shore side facilities.

4.3 Installed Base Reporting (CNO Data Call)

CNO letter Ser N451I/6U598044, dated 1 May 1996, established an annual reporting requirement for 1996-2001 for the number of systems and quantities of all ODS installed in the Navy and USMC [CNO, 1996]. The data are collected separately for weapon platforms and shore side facilities. A copy of the CNO letter and data requirements are provided in Appendix B. The CNO letter does not require reporting for bulk stock, spares, or other assets that are not currently "installed" or "in-use."

4.4 Assessment of Normal Reporting

It is not possible to determine the quantity in the Bank or the usage of Halon 1211 solely with the data that is normally tracked and reported. The data does not include (1) the ultimate end-user of the Halon shipped from DSCR, (2) on-hand quantities at organizations and activities e.g., NAS, MCAS, NS, ships, etc., (3) exact quantities of returns, and (4) organization/activity of the returns. These data gaps do not allow the Navy to create a "material balance" for each

activity/organization and hence can not determine total Bank quantities or usage Navy/USMC-wide. For example, if organizations are using internal supplies of Halon 1211, the quantities ordered from the Reserve would be lower than actual usage. Estimates would over state the ability of the existing stocks of Halon 1211 to support the field. If organizations are ordering more Halon 1211 from the Reserve than they are using, i.e., building up internal supplies, the quantities ordered would be higher than actual usage. Estimates would under state the ability of the existing stocks of halon to support the requirements.

5.0 ESTIMATION OF HALON 1211 BANK

To overcome specific data gaps several one-time data calls and surveys were performed. These data and the normally reported data are provided and discussed in three distinct areas: (1) Reserve, (2) Installed Base, and (3) Storage/Backup Quantities. These three categories represent the total supplies, or Bank, of Halon 1211 available to the Navy/USMC.

5.1 Halon 1211 Reserve

The total quantity of Halon 1211 in the Reserve must be calculated from the DSCR data previously described. At any one time, the total amount is equal to the sum of the cumulative Customer Returns and the ODS Ready for Issue Product minus the cumulative Requisitions. As described previously, the data for Returns is an estimate based on 75 percent of the capacity of the cylinders on hand. This leads to some uncertainty in the actual quantity of Navy Halon 1211 in the Reserve. Based on historical data, however, DSCR believes that the estimation is very close to actual [Sibley, 1996-1997]. DSCR reported that as of 30 June 1997 the quantity of Halon 1211 owned by the Navy/USMC was approximately 450,000 pounds. This quantity includes a 100,000 pound transfer from the USAF.

5.2 Installed Base at Shore Side Facilities

The quantity of Halon 1211 installed in fire protection equipment is normally reported through the CNO Data Call. The quantities reported for 1 January 1996 and 1 January 1997 are provided in Table 1 [Mullenhard, 1996-1997]. As can be seen from the data, the results for CY 96 and CY 97 vary considerably.

Table 1. CNO Data Call

	1 January 1996		1 January 1997	
	Systems	Pounds	Systems	Pounds
Portable Extinguishers (hand helds)	1482	19,509	701	7,947
Flight line 150 lb Wheeled Units	2004	300,600	2571	379,045
Flight line Systems	78	31,385	1013	155,393
Other / Not Identified	2300	N/A	619	60,032
Total Installed Base	5874	351,494	4602	508,198

A separate request was made by NAVSEA, Code 03G2, for the east coast and west coast Fire Marshals to provide data on the quantities of Halon 1211 (1) installed in CFR equipment, (2) contained in hand held and flight line extinguishers, and (3) stored in bulk cylinders at shore side activities. The request did not include USMC installations. The east coast Fire Marshal reported the data to NAVSEA in the first quarter of FY97 based on the informal request [Darwin, 1996]. The data included all shore side facilities that fall under the east coast. The west coast Fire Marshal had not interpreted the NAVSEA discussion as a request for data. HAI clarified the need for the data and a submission was provided by the west coast Fire Marshal in early second quarter FY 97 [Baldwin, 1997]. The west coast data did not include Naval Base San Diego, NAF El Centro, NS Pearl Harbor, and NAS LeMoore. The data for the east and west coast are provided in Table 2.

Attempts to receive consolidated information from the USMC similar to that provided by the Navy Fire Marshals was unsuccessful. It was determined that the only USMC fire truck that contains Halon 1211 is the P-19. A centralized listing of the total number P-19s 'owned' by the USMC was obtained. The vehicles assigned to Goodfellow AFB for firefighting training were excluded. To obtain the remainder of the data, separate telephone calls were made to the USMC Aviation Fire Protection and Recovery Officers. The data are provided also in Table 2. For ease in discussion, all data contained in Table 2 will be referred to as the 'Fire Marshal' data.

Table 2. Quantities of Halon 1211 (pounds) Reported by Navy Fire Marshals and USMC Aviation Fire Protection and Recovery Officers

	East Coast	West Coast	Marine Corps	Total Reported
Portable Extinguishers	334,431	147,829	265,030	747,290
CFR Vehicles	60,480	17,800	90,500	168,780
Total Installed Base	394,911	165,629	355,530	916,070
Storage Quantities	105,024	29,592	183,700	318,316
Total	499,935	195,221	539,230	1,234,386

The CNO data and the Fire Marshal data are broken out differently. However, that portion of the Navy Fire Marshal data representing the installed base should be comparable to the total value from the CNO data. As can be seen in Tables 1 and 2, a significant difference exists between the two sets of data. To determine why this difference exists and/or which data set may be better, the CFR vehicle data and the portable extinguisher data were analyzed further.

5.2.1 CFR Vehicles

A third method was used to estimate the quantities of Halon 1211 installed on CFR equipment to serve as a 'check' of the CNO and the Navy portion of the Fire Marshal data. An inventory of Navy CFR vehicles (excluding USMC vehicles) was supplied by Naval Facilities

Engineering Command (NAVFAC) [NAVFAC, 1996]. The inventory included the organization (by UIC), the make, model and year. A second inventory was provided by the east coast Fire Marshall for the CFR equipment for east coast activities that listed additional information [Rout, 1996]. In addition to the information contained in the NAVFAC inventory, the Fire Marshal inventory included status, replacement year, and original purchase price. The resulting inventories for all CFR equipment and Halon 1211 equipment only are provided in Appendices C and D.

Not all CFR vehicles contain Halon 1211. The NATOPS provides descriptions of many of these vehicles that indicate whether Halon 1211 is installed in the vehicle [NATOPS, 1994]. Additional information was obtained through discussions with the east coast Fire Marshal [Rout, 1996-1997]. Three CFR vehicles contain Halon 1211: Amertek CF 4000L (7160), Oshkosh TA-3000 (7190) and the P-19/P-19A (7160). All three of these CFR vehicles contain 500 pounds of Halon 1211. The description in the NATOPS did not indicate that the TA-3000 contained Halon 1211. The east coast Fire Marshal and field data confirmed the presence and quantity of Halon 1211 on the TA-3000. The NATOPS listed three different twin-agent units (TAUs in service, two of which may contain Halon 1211 or PKP. The east coast Fire Marshal indicated that TAUs purchased between 1977 and approximately 1986 contained Halon 1211 [Rout, 1996-1997]. TAUs purchased after 1986 do not. However, some of the 1977-86 TAUs may have been retrofit away from using Halon 1211. An additional area of concern is that the inventory tracks the vehicle that was used for the TAU and not the TAU itself. In some cases, the TAU is no longer in use, but the vehicle is. These issues lead to a small uncertainty, but the resulting inventory, provided in Appendix D, should be useful in determining the quantities of Halon 1211 installed in CFR equipment. The quantities of Halon 1211 calculated from this method are given in Table 3.

Table 3. Quantities of Halon 1211 (pounds) from CFR Equipment Inventory Method

East Coast	West Coast	Marine Corps	Total
68,400	33,500	90,500	192,400

While a similarly detailed inventory was not available for the USMC, the centralized listing of the total number of USMC P-19s was used to calculate the total capacity. The NATOPS indicated that the USMC TAU contains PKP and not Halon 1211. Additional information on the TAUs was obtained through the telephone interviews of the MCAS Aviation Fire Protection and Recovery Officers [MCAS, 1997]. Very few USMC TAUs contain Halon 1211. The quantities of Halon 1211 calculated from these data are provided also in Table 3. For ease in the discussion, the data contained in Table 3 will be referred to as the 'CFR Inventory' data.

A comparison was performed of the Navy portion of the Fire Marshal data and the CFR Inventory data to determine the extent of agreement. As shown in Table 4, the two methods agree well for the east coast but do not agree well for the west coast.

Table 4. Comparison of Fire Marshal Data versus CFR Inventory Data for Navy Facilities

	Fire Marshal	CFR Inventory	Agreement
East Coast	60,480	68,400	0.88
West Coast	17,800	33,500	0.53

Several reasons exist for the difference in the agreement of the data. The data from the east coast Fire Marshal were based on the on-hand quantity at the time of the survey [Rout, 1996-1997]. If CFR vehicles were partially full, or empty awaiting repair/servicing, the actual amount was provided in lieu of the capacity of the vehicle. The west coast Fire Marshal did not report actual on-hand quantities. Instead, the capacity of the vehicle was reported. In addition, as noted previously, data provided by the west coast Fire Marshal were not complete for all Navy activities. To correct the data to account for the unreported west coast activities, the quantity of Halon 1211 from the CFR Inventory data for the unreported west coast activities was removed and compared to that of the Fire Marshal data. A similar correction was also performed by adding the quantity of Halon 1211 from the CFR Inventory for the unreported west coast activities to the Fire Marshal data. The results for both of these corrections were compared to the Fire Marshal data and CFR Inventory data as appropriate. The results are provided in Table 5.

Table 5. Quantities for Reported versus Unreported West Cost Navy Activities

Fire Marshal	West Coast CFR Inventory without Unreported Activities	West Coast Fire Marshall plus Unreported	CFR Inventory Total	Agreement
17,800	18,200	33,100	33,500	99%

The CFR equipment portion of the CNO data were compared to the west coast Fire Marshall data for several west coast activities [Mullenhard, 1996-1997]. In all cases, the quantities of Halon 1211 from the CNO data were less than from the Fire Marshal data. The excellent agreement between the Fire Marshal data and CFR Inventory data lends credibility to these two data sets. For this reason, the quantity of Halon 1211 from the Fire Marshal data as supplemented by the CFR Inventory was used as the basis for determining the total quantity of Halon 1211 installed in Navy/USMC CFR equipment.

Based on the above analyses, it appears that the NAVFAC CFR Inventory is a good tool to calculate the quantities of Halon 1211 contained on CFR vehicles and can be used to track and estimate quantities in the future. The agreement between the Fire Marshal data versus the CFR Inventory for the east coast is 88 percent. While several issues can lead to uncertainty, the main reason for the difference is that the east coast Fire Marshal provided the quantity that was actually installed instead of the potential capacity of the vehicle. As it is unlikely that all CFR equipment will be filled to capacity at all times, the actual quantities will be lower than the quantities based on capacity. Although the value of 88 percent is obtained from this one set of data, it is reasonable to apply this same value to Navy west coast activities as well. The 88 percent reduction factor was not used for the USMC CFR equipment because the quantities of CFR vehicles for the USMC was less certain than for the Navy and not all USMC activities reported.

The total Halon 1211 contained in all Navy/USMC CFR vehicles is estimated to be 180,500 pounds. A break out of the final estimate for Halon 1211 quantities on Navy and USMC CFR equipment is provided in Table 6.

Table 6. Final Estimate of Quantities of Halon 1211 (pounds) Installed on Navy and USMC CFR Equipment (CFR Vehicles and TAUs)

	Navy East Coast	Navy West Coast	USMC	Total
CFR Vehicles including TAUs	60,500	29,500	90,500	180,500

5.2.2 Portable Extinguishers (Hand Held and Flight Line Units)

As was true for the CFR equipment, the CNO data and the Fire Marshal for the quantities of Halon 1211 in portable extinguishers do not agree. The CNO data were compared to the west coast Fire Marshal data to determine how well the two sets of data compare on a facility by facility basis [Mullenhard, 1996-1997]. While the CNO data was significantly lower than the Fire Marshal data in all cases, no direct pattern was discernible. Attempts were made to determine if a third independent method was available to estimate the quantities of Halon 1211 in portable extinguishers.

The Item Manager at Robins AFB for the flight line extinguisher was contacted to determine if quantities and locations were tracked. Since 1984, the Item Manager has not purchased any units [Williams, 1997]. However, it is possible, and likely, that local purchases occurred after that time. The estimated number of units in the USAF is 16,622, but their location is not tracked. No definitive data were provided by the Navy/USMC to the Item Manager. A best guess was made by the Item Manager that the total number of Halon 1211 flight line extinguishers DoD-wide was 23,000. However, no method existed to determine the accuracy of that estimate, the percentage owned by the Navy/USMC, or the locations of the extinguishers.

The second independent estimating technique examined was to use the NATOPS requirements for flight line extinguishers based on the number of aircraft at a shore side facility. Section 3.3.2, Primary Airfield Extinguishers, requires that a minimum of (1) one 150 pound Halon 1211 extinguisher be available per three "small" aircraft, (2) one extinguisher per two "large" aircraft, and (3) two extinguishers per C-130 aircraft [NATOPS, 1994]. One flight line

extinguisher is also required per two hot re-fueling points. An additional 10 percent should be kept in storage for backup supply. Quantities of hand held extinguishers are also recommended in the NATOPS. All major firefighting vehicles, and other vehicles as appropriate, should have a 20 pound Halon 1211 extinguisher, an 18 or 27 pound PKP extinguisher, and two 15 pound CO_2 extinguishers.

An estimate of the number of Halon 1211 flight line extinguishers was calculated for six shore based Navy/USMC facilities based on aircraft type and quantities, and other NATOPS requirements. An estimate of the number of 20 pound Halon 1211 extinguishers was also made using the CFR Inventory data. The quantities reported by the field in the Fire Marshal data average two to three times higher than estimated using the NATOPS requirements. One location had as much as ten times the quantity, based on pounds, required by the NATOPS.

The results for the CNO data versus the NATOPS requirements could not be explained. The results for the Fire Marshal data versus the NATOPS requirements were not unexpected and could be explained in three ways.

(1) The NATOPS lists the minimum requirements. Each facility can require additional quantities of extinguishers, particularly flight line extinguishers, based on their own assessment;

(2) While the total number of aircraft Navy/USMC-wide may have been reduced in recent years, no requirements exist for the shore side facilities to re-determine their flight line extinguisher requirements. The current quantity of flight line extinguishers may be based on a previously higher number of total aircraft; and/or

(3) Numbers of aircraft stationed at a particular shore side facility may change. Quantities of flight line extinguishers may be based on a previously higher number of aircraft fielded at that shore side facility.

Based on the preceding analysis and the results for the CFR equipment, emphasis was placed on the Fire Marshal data to serve as the basis to estimate the quantity of Halon 1211 contained in portable extinguishers.

The west coast Fire Marshal data for portable extinguishers have the same two limitations as with the CFR equipment data: (1) not all of the activities reported, and (2) capacities and not actual quantities were reported. To resolve the missing activities from the Fire Marshal data, three methods were considered. The first was to use the CNO data for the missing activities. This method would likely under estimate the quantities of Halon 1211. The second method was to use the NATOPS minimum requirements for each missing activity. This method would also underestimate the quantities. The third method was to apply the same scaling factor developed for CFR vehicles to estimate the unreported activities. Based on the overall excellent agreement of the Fire Marshal data for CFR equipment, the latter method was chosen to estimate the missing west coast data. Unlike the case for the CFR equipment, no method was available to determine the extent to which the east coast values based on actual amounts varied from the values based on capacity. No correction factor could be developed, and therefore, the "as-reported" quantities were used.

The total Halon 1211 contained in all Navy/USMC portable extinguishers that are in-service (i.e., does not include extinguishers in storage, supply, etc.) is estimated to be 877,000 pounds. A break out of the final estimate for portable extinguishers is provided in Table 7.

Table 7. Final Estimate of Quantities of Halon 1211 (pounds) Installed in Navy and USMC Portable (Hand Held and Flight Line) Extinguishers

	Navy East Coast	Navy West Coast	USMC	Total
Portable Extinguishers (Hand Held and Flight Line)	334,000	278,000	265,000	877,000

5.3 Local In-storage and Backup Quantities at Shore side Facilities

The only data for the storage and backup supplies of Halon 1211 come from the Fire Marshal data. As for the CFR equipment and portable extinguishers, it was necessary to estimate the quantities for the west coast Navy activities that did not report. Two methods were evaluated. The first was to use the same scaling factor originally developed for the CFR equipment and subsequently used for portable extinguishers. The second was based on the NATOPS requirement for backup supplies. The NATOPS requires that (1) a minimum of one vehicle load of Halon 1211 be maintained for each designated CFR vehicle/equipment assigned and (2) 10 percent of the quantity contained in flight line extinguishers be maintained for backup supplies [NATOPS, 1994]. While the estimation method using the NATOPS requirements for flight line extinguishers was determined to greatly underestimate the quantity, the Navy Fire Marshals and several USMC Aviation Fire Protection and Recovery Officers reported that they expected the on-hand quantities to be very close to the NATOPS requirements [Rout, 1996-1997; Baldwin, 1996-1997; MCAS, 1997].

Quantities required by the NATOPS were calculated from the CFR Inventory shown in Table 3, and the assumption that 95 percent of the total quantity in portable extinguishers shown in Table 7 is due to the flight line extinguisher. The results based on the NATOPS storage/backup requirements indicated that on average Navy/USMC facilities have 102 percent of what is required. The storage/backup supplies identified at shore side facilities are close to those specified in the NATOPS requirements. This may be due to the ability of the Fire Chiefs and Aviation Fire Protection and Recovery Officers to maintain direct control of storage/backup supplies.

The scaling factor method was also evaluated to estimate the storage/backup supplies for unreported activities. It was determined that while BRAC locations may still have CFR equipment and portable extinguishers that were awaiting re-deployment, all of the storage/backup supplies have already been re-deployed. This would reduce the validity of the scaling factor

method and may result in underestimating the quantities. Based on this analysis, and the Fire Marshall/Aviation Fire Protection and Recovery Officer views, the quantities of storage/backup suppliers for the missing Navy west coast activities were estimated based on the NATOPS requirements.

The final estimate of Halon 1211 contained for storage/backup supplies in all Navy/USMC facilities is 349,000 pounds. A break out is provided in Table 8.

Table 8. Final Estimate of Backup/Storage Quantities of Halon 1211 (pounds) in Navy and USMC Shore Side Facilities

	Navy East Coast	Navy West Coast	USMC	TOTAL
Backup / Storage	105,000	60,000	184,000	349,000

5.4 Navy/USMC Shore side Facilities Portion of Halon 1211 Bank

Based on the estimates for CFR equipment, portable extinguishers, and storage/backup supplies the portion of the Navy/USMC Halon 1211 Bank at shore side facilities is estimated to be 1,406,500 pounds. The quantities separated by firefighting system are provided in Table 9.

Table 9. Total Quantities of Halon 1211 (pounds) by Fire Fighting System for Navy/USMC Shore Side Facilities

	Navy	USMC	Total
Installed Base			
CFR Equipment	90,000	90,500	180,500
Portable Extinguishers	612,000	265,000	877,000
Local Storage/Backup	165,000	184,000	349,000
Total Shore Side Facilities Portion of Navy/USMC Bank	867,000	539,500	1,406,500

5.5 Estimate of Shipboard Halon 1211

The three major ship board firefighting systems of interest to this study are hand held extinguishers, the P-16, and the TAU-2H [NATOPS, 1994]. The hand held extinguishers at the AFFF hose stations and within the crash and rescue tools may be PKP and CO_2, or Halon 1211 [NATOPS, 1994]. The portable extinguishers were PKP and CO_2 when these vessels were originally designed [Darwin, 1996-1997]. Some of these extinguishers may have been replaced with Halon 1211, but this effort would be done on a ship by ship basis. No wholesale change-out from PKP/ CO_2 to Halon 1211 was performed. The P-16 contains 400 pounds of internally stored Halon 1211 and the TAU-2(H) contains 350 pounds of Halon 1211 [NATOPS, 1994]. The P-25, scheduled to begin to replace the P-16 in the near future, is not currently designed to contain internal supplies of Halon 1211 [Walsh, 1996-1997]. Three 20 pound Halon 1211 hand held extinguishers will be mounted on the P-25.

An inventory for the P-16 , TAU-2H, and hand held extinguishers used shipboard was not identified. In order to develop an inventory the list of the current Fleet, by class of ship, was obtained through the Navy home page on the world wide web [USN, 1997]. In order to determine the number of firefighting systems on each ship, the Support Equipment Recommendation Data (SERD), dated 12/02/96, were obtained for the P-16 and the TAU-2(H) [SERD:P-16, 1996; SERD:TAU-2H, 1996]. The SERD lists the Basis of Issue for each class of ship and represents the number that each class is authorized to carry. To estimate the shipboard quantity of Halon 1211 for hand held extinguishers, it is assumed that the majority are PKP and CO_2. While it is possible that a small number of Halon 1211 hand held extinguishers may be present on some ships, the quantity of Halon 1211 is assumed to be negligible.

The inventory for shipboard systems was developed under the assumptions that (1) the SERD is the definitive source for quantities of systems on board ship and (2) each ship currently carries exactly what is authorized on the SERD. Changes in the NATOPS discussed in Assignment II – Halon 1211 Requirements Review of this study were not used in developing the

inventory. Information on ships under construction, differences with NATOPS requirements, and changes to ship class system requirements are provided for use in developing the quantity of Halon 1211 required to support future firefighting operations and future tracking needs. While these changes may affect the SERDs in the future, they do not reflect the current systems in place.

Based on the two SERDs, four ship classes currently carry the P-16 and/or the TAU-2H: (1) CV/CVN, (2) LPH, (3) LHA, and (4) LHD [SERD:P-16, 1996; SERD:TAU-2H, 1996]. In addition, it was reported that the LPDs will be authorized to carry Halon 1211 TAUs in the near future [Walsh, 1996-1997]. Currently, the 11 fielded LPDs, plus the one being built, do not contain Halon 1211, but they will in the future.

5.5.1 CV/CVN

Twelve CV/CVNs are currently in the Fleet, and two additional CVNs are being built (CVN 75 and CVN 76) [USN, 1997]. The CV/CVNs are authorized to carry three P-16 and three TAU-2Hs [SERD:P-16, 1996; SERD:TAU-2H, 1996]. To support the P-16s/TAU-2H, the CV/CVNs carry three 1500 pound Halon 1211 cylinders as backup supplies [Persutti, 1997]. Assuming that all ships are filled to 100 percent of capacity at all times, the total Halon 1211 carried on CV/CVNs is 81,000 pounds. Table 10 provides a break out of the quantity of Halon 1211 contained on active CV/CVN ships. The entries in italics are provided for future reference only and are omitted in the calculation for the current installed base.

Table 10. Quantities of Halon 1211 (pounds) on CV/CVNs by Firefighting System

		P-16		TAU-2(H)		1500 lb		Pounds
		Auth	lb	Auth	lb	Auth	lb	Halon 1211
CV 62	USS INDEPENDENCE	3	1200	3	1050	3	4500	6750
CV 63	USS KITTY HAWK	3	1200	3	1050	3	4500	6750
CV 64	USS CONSTELLATION	3	1200	3	1050	3	4500	6750
CV 67	USS JOHN F KENNEDY	3	1200	3	1050	3	4500	6750
CVN 65	USS ENTERPRISE	3	1200	3	1050	3	4500	6750
CVN 68	USS NIMITZ	3	1200	3	1050	3	4500	6750
CVN 69	USS DWIGHT D EISENHOWER	3	1200	3	1050	3	4500	6750
CVN 70	USS CARL VINSON	3	1200	3	1050	3	4500	6750
CVN 71	USS THEODORE ROOSEVELT	3	1200	3	1050	3	4500	6750
CVN 72	USS ABRAHAM LINCOLN	3	1200	3	1050	3	4500	6750
CVN 73	USS GEORGE WASHINGTON	3	1200	3	1050	3	4500	6750
CVN 74	USS JOHN C. STENNIS	3	1200	3	1050	3	4500	6750
CVN 75	*HARRY S. TRUMAN (NEW)*	*3*	*1200*	*3*	*1050*	*3*	*4500*	*6750*
CVN 76	*RONALD REAGAN (NEW)*	*3*	*1200*	*3*	*1050*	*3*	*4500*	*6750*
Total	Currently Fielded	36	14400	36	12600	36	54000	81,000

5.5.2 Amphibious Assault Ship – Iwo Jima Class (LPH)

Two LPHs are currently in the Fleet [USN, 1997]. Each is authorized to carry two P-16s and two TAU-2Hs [SERD:P-16, 1996; SERD:TAU-2H, 1996]. The NATOPS, however, requires only one P-16 [NATOPS, 1994]. To support the P-16s and TAU-2Hs, each ship carries two 1500 pound storage cylinders [Persutti, 1997]. Assuming that all ships are filled to 100 percent of capacity at all times, the total Halon 1211 carried on LPHs is 9,000 pounds. Table 11 provides a break out of the quantity of Halon 1211 contained on active LPHs.

Table 11. Quantities of Halon 1211 (pounds) on LPHs by System

		P-16		TAU-2(H)		1500 Pound		Pound
		Auth	lb	Auth	lb	Auth	lb	Halon 1211
LPH 9	USS GUAM	2	800	2	700	2	3000	4500
LPH 11	USS NEW ORLEANS	2	800	2	700	2	3000	4500
Total	Currently Fielded	4	1600	4	1400	4	6000	9000

5.5.3 Amphibious Assault Ship – Tarawa Class (LHA)

Five LHAs are currently in the Fleet [USN, 1997]. Each is authorized to carry two P-16s and two TAU-2Hs [SERD:P-16, 1996; SERD:TAU-2H, 1996]. The current NATOPS lists two P-16s and three TAU-2Hs [NATOPS, 1994]. At the 1996 NATOPS conference, a change was approved to require three Mobile Fire Fighting Vehicles (MFFVs) instead of three P-16s allowing the use of towed TAU-2Hs to meet this requirement [NATOPS, 1996]. To support the P-16s and TAU-2Hs, each ship carries two 1500 pound storage cylinders. Assuming that all ships are filled to 100 percent of capacity at all times, the total Halon 1211 carried on LHAs is 22,500 pounds. Table 12 provides a break out of the quantity of Halon 1211 contained on active LHAs.

Table 12. Quantities of Halon 1211 (pounds) on LHAs by System

		P-16		TAU-2(H)		1500 Pound		Pound
		Auth	lb	Auth	lb	Auth	lb	Halon 1211
LHA 1	USS TARAWA	2	800	2	700	2	3000	4500
LHA 2	USS SAIPAN	2	800	2	700	2	3000	4500
LHA 3	USS BELLEAU WOOD	2	800	2	700	2	3000	4500
LHA 4	USS NASSAU	2	800	2	700	2	3000	4500
LHA 5	USS PELELIU	2	800	2	700	2	3000	4500
Total	Currently Fielded	10	4000	10	3500	10	15000	22,500

5.5.4 Amphibious Assault Ship – Wasp Class (LHD)

Four LHDs are currently in the Fleet, one is expected to be commissioned in the fall of 1997 (LHD 5), and one more began construction in May 1997 (LHD 6) [USN, 1997; Walsh, 1996-1997]. Each is authorized to carry two P-16s and two TAU-2Hs [SERD:P-16, 1996; SERD:TAU-2H, 1996]. Based on the requisition for Halon 1211 received by DGSC Richmond, it is assumed that LHD 5 currently has filled Halon 1211 firefighting systems on board (or at the yard). As was true for the LHAs, the current NATOPS requires two P-16s and three TAU-2Hs [NATOPS, 1994]. At the 1996 NATOPS conference, a change was approved to require three Mobile Fire Fighting Vehicles (MFFVs) instead of three P-16s allowing the use of towed TAU-2Hs to meet this requirement [NATOPS, 1996]. To support the P-16s and TAU-2Hs, each ship carries two 1500 pound storage cylinders [Persutti, 1997]. Assuming that all ships are filled to 100 percent of capacity at all times, the total Halon 1211 carried on LHDs is 22,500 pounds. Table 13 provides a break out of the quantity of Halon 1211 contained on active LHDs. The entries in italics are provided for future reference only and are omitted in the calculation for the current installed base.

Table 13. Quantities of Halon 1211 (pounds) on LHDs by System

		P-16		TAU-2(H)		1500 Pound		Pound
		Auth	lb	Auth	lb	Auth	lb	Halon 1211
LHD 1	USS WASP	2	800	2	700	2	3000	4500
LHD 2	USS ESSEX	2	800	2	700	2	3000	4500
LHD 3	USS KEARSARGE	2	800	2	700	2	3000	4500
LHD 4	USS BOXER	2	800	2	700	2	3000	4500
LHD 5	USS BATAAN (Fall 97)	2	800	2	700	2	3000	4500
LHD 6	*USS BON HOMME RICHARD*	*2*	*800*	*2*	*700*	*2*	*3000*	*4500*
Total	Currently Fielded	10	4000	10	3500	10	15000	22,500

5.5.5 Amphibious Transport Dock – LPD

Eleven LPDs are currently in the Fleet, one is under construction, and contract options exist for two more [USN, 1997]. Currently, the TAUs on the LPDs contain PKP. It was reported that these TAUs will be retrofit to replace the PKP with Halon 1211 in the near future [Walsh, 1996-1997]. While no Halon 1211 is currently on board the LPDs, it will be necessary in the future to track the Halon 1211 that will be installed. The LPD inventory is provided here to capture complete information for future tracking requirements.

Table 14. Future Quantities of Halon 1211 (pounds) on LPDs by System

		P-16		TAU-2(H)		1500 Pound		Pound
		Auth	lb	Auth	lb	Auth	lb	Halon 1211
LPD 4	*USS AUSTIN*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 5	*USS OGDEN*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 6	*USS DULUTH*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 7	*USS CLEVELAND*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 8	*USS DUBUQUE*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 9	*USS DENVER*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 10	*USS JUNEAU*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 12	*USS SHREVEPORT*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 13	*USS NASHVILLE*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 14	*USS TRENTON*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 15	*USS PONCE*	*0*	*0*	*2*	*700*	*1*	*1500*	*2200*
LPD 17	*USS SAN ANTONIO*							
LPD 18	*Contract Option*							
LPD 19	*Contract Option*							
Total	*Future Requirement*	*0*	*0*	*22*	*7700*	*11*	*16500*	*24,200*

5.5.6 Landing Craft, Air Cushioned (LCAC)

It is estimated that 85 LCACs are currently in the Fleet [Darwin, 1996-1997]. Each ship contains one 150 pound Halon 1211 flight line extinguisher permanently mounted to the ship, two 17 pound Halon 1211 hand helds, and four 5 pound Halon 1211 hand helds for a total of 204 pounds per ship. Assuming that all ships are filled to 100 percent of capacity at all times, the total Halon 1211 carried on LCACs is 17,340 pounds.

5.5.7 Training and Other Fielding

Four Navy training sites currently have P-16s and/or TAU-2Hs [Walsh, 1996-1997]. NAWC Lakehurst, NAS North Island, and NAS Jacksonville have one P-16 each, and NATTC Pensacola has two P-16s. It is currently estimated that a total of 69 P-16s are still active. From the list of on board ships and training facilities, four P-16s are available for deployment/re-deployment. NAWC Lakehurst, NAS North Island, and NAS Jacksonville also have one TAU-2H each. No other fielded TAU-2Hs were identified. The total Halon 1211 installed on these systems is 4,650 pounds.

5.5.8 Total Shipboard Halon 1211

Based on the estimates for Aircraft Carriers (CV/CVNs), Amphibious Assault Ships (LHAs, LHDs, and LPHs), Air Cushioned Landing Craft (LCAC), the systems at training facilities, those available for re-deployment, and the assumption that all systems are filled to 100 percent of capacity, the total Halon 1211 installed shipboard is 156,990 pounds. Table 15 provides a break out of this total by ship class or location, and firefighting system.

Table 15. Quantities of Halon 1211 (pounds) Ship Board by Ship Class and System

	P-16	TAU-2H	Backup	Installed	Hand Helds	Total
CV/CVNs	14,400	12,600	54,000	NA	0	81,000
LPH	1,600	1,400	6,000	NA	0	9,000
LHA	4,000	3,500	15,000	NA	0	22,500
LHD	4,000	3,500	15,000	NA	0	22,500
LCAC	NA	NA	NA	12,750	4,590	17,340
Training	2,000	1050	NA			3,050
Available	1,600	0	NA			1,600
Total	24,800	21,700	93,000	12,750		156,990

5.6 Estimate of Aircraft Halon 1211

Seven aircraft currently use Halon 1211 hand held extinguishers: C-9, RC/UC-12M, T-44, C-20, TH-57A/B, C-9, EC-24A [Bein, 1997]. Each Fleet of aircraft is small, and this use accounts for a very small quantity of installed Halon 1211, only 1,022 pounds. Table 16 provides the number of aircraft, quantity and size of the Halon 1211 extinguisher, and the total quantity of Halon 1211 for each aircraft type.

Table 16. Quantities of Halon 1211 (pounds) on Aircraft by Aircraft System

Aircraft	Size of Hand Held (Pounds)	Hand Held Extinguishers per Aircraft	Quantity of Halon 1211
C-9	2.5 13	1 1	449.5
RC/UC-12M	2.5	2	60.0
T-44	2.5	1	137.5
C-20	2.5	2	35.0
TH-57A/B	2.5	1	315.0
EC-24	5 10	1 2	25.0
Total			1022.0

5.7 Summary of Halon 1211 Bank

Based on the estimates for shore side equipment, shipboard systems, and aircraft, the entire Bank of Halon 1211 owned by the Navy is estimated to be 2,014,152 pounds. The installed base of Halon 1211 represents 60 percent of the Bank. The quantity available to refill/re-supply the field represents the remaining 40 percent of the Bank. The refill/re-supply quantity is divided between the Reserve at DGSC Richmond and the shore side facilities. The specific breakdown is provided in Table 17.

Table 17. Navy Bank of Halon 1211

Location	Halon 1211 (pounds)
Reserve	450,000
Navy Shore Side	
CFR Equipment	90,000
Hand Held and Flight Line Extinguishers	612,000
Local Backup Supply/storage	165,000
USMC Shore Side	
CFR Vehicles (including deployable)	90,500
Hand Held and Flight Line Extinguishers	265,000
Local backup supply/storage	184,000
Shipboard	
CV/CVNs	81,000
LPH	9,000
LHA	22,500
LHD	22,500
LCAC	17,340
Training	3,050
Available	1,600
Aircraft	1,022
Total	**2,014,512**

6.0 QUANTITIES REQUIRED

The optimum method for calculating the usage of Halon 1211 would be to track the changes in the four sets of data that represent the Halon 1211 Bank: (1) Ready for Issue quantities in the Reserve, (2) Returns received by the Reserve for recycling or as excess and not yet counted in Ready for Issue, (3) quantities in the Installed Base, and (4) quantities of Local Backup/Storage Supplies. While, as discussed previously, the two data sets from the Reserve have sufficient historical tracking to monitor changes, the Installed Base and Local Backup/Storage Supplies do not. Alternate methods were needed to estimate the usage rate of Halon 1211.

Three strategies were considered to obtain the usage data. The first was to request usage rate data directly from the using activities, e.g., NAS, MCAS, ships, etc. A message was developed that requested field personnel to estimate their use of Halon 1211 for the past three years and to indicate the reason for the use, e.g., accidental discharge, fire, maintenance action, etc. In light of the number of activities that would need to report these data and the subsequent burden that the reporting would represent, it was requested that an alternate means of estimation be evaluated prior to considering a field data call. In order to reduce the field burden, the second and third estimating techniques emphasized the use of existing data. The second method was to estimate the usage based on the quantities of Halon 1211 shipped to the field from the Reserve, and the third method was to use the Fire Incident Data from the Navy Safety Center used to develop the fire protection requirements reported under Part II – Halon 1211 Requirements Review of this study.

6.1 Reserve Shipments Method

Data were provided from NAVAIR Code AIR-8.0Y on the quantities of Halon 1211 from the Reserve issued to the field [NAVAIR, 1997]. The data covered the 30 month period, January 1, 1995 through June 30, 1997. As previously described in Section 4.4, Assessment of Normal Reporting, these data do not account for the returns to the Reserve or changes to the storage/backup quantities at each facility.

6.1.1 Usage Rate of Halon 1211 Shipboard

As shown in Table 18, 23 of the 24 ships that contain Halon 1211 major firefighting systems ordered Halon 1211 from the Reserve. Only the USS THEODORE ROOSEVELT, CVN-71, did not order from the Reserve. According to data provided by NAVSEA, CVN-71 did deploy during the 30 month period. It is not clear why this one ship did not order any Halon 1211 from the Reserve. Over the 30 month period, the total amount supplied from the Reserve to ship based activities was 98,700 pounds. For the 23 ships that received Halon 1211, the average

monthly quantity supplied was approximately 3,200 pounds. On the basis of all 24 ships in the Fleet, the quantity of Halon 1211 used by the Fleet is estimated to be 41,200 pounds per year. This represents approximately 10 percent of the total Halon 1211 currently available in the Reserve.

Table 18. Shipments of Halon 1211 to Ship Based Activities

End-User Activity	Data Source	Month	UIC	Amount Shipped (Pounds)	Percent of Backup	Percent of Total
CV-62	NAVICP	Aug-96	03362	2,400	53%	36%
	NAVICP	Feb-97	03362	3,000	67%	44%
	NAVICP	Feb-97	03362	3,000	67%	44%
CV-63	DSC	Mar-96	03363	6,000	133%	89%
CV-64	DSC	Oct-96	03364	3,000	67%	44%
	DSC	Mar-97	03364	3,000	67%	44%
CV-66	DSC	Jul-95	03366	1,500	33%	22%
	DSC	Aug-95	03366	1,500	33%	22%
CV-67	DSC	Jul-95	03367	4,500	100%	67%
	DSC	Apr-97	03367	3,000	67%	44%
CVN-65	DSC	Aug-95	03365	4,500	100%	67%
CVN-68	DSC	Feb-95	03368	6,000	133%	89%
	DSC	Apr-97	03368	3,000	67%	44%
CVN-70	DSC	Mar-95	20993	3,000	67%	44%
	DSC	Jun-97	20993	4,500	100%	67%
CVN-71						
CVN-72	DSC	Mar-97	03364	4,500	100%	67%
CVN-73	DSC	Jan-96	21412	1,500	33%	22%
CVN-74	DSC	Jul-95	21847	1,500	33%	22%
	DSC	Sep-95	21847	3,000	67%	44%
	DSC	Oct-95	21847	1,500	33%	22%
LHA-01	DSC	Jan-95	20550	3,000	100%	67%
LHA-02	DSC	Sep-95	20632	3,000	100%	67%
LHA-03	NAVICP	Apr-97	20633	1,000	33%	15%
LHA-04	DSC	Aug-96	20725	3,000	100%	67%
LHA-05	DSC	May-95	20748	3,000	100%	67%

Table 18. Shipments of Halon 1211 to Ship Based Activities (Continued)

End-User Activity	Data Source	Month	UIC	Amount Shipped (Pounds)	Percent of Backup	Percent of Total
LHD-01	DSC	Apr-97	21560	3,000	100%	44%
LHD-02	DSC	Dec-95	21533	1,500	50%	33%
	DSC	Sep-96	21533	3,000	100%	67%
LHD-03	DSC	Oct-96	21700	1,500	50%	33%
LHD-04	DSC	Jul-95	21808	1,500	50%	33%
	DSC	Aug-95	21808	1,500	50%	33%
LHD-05	DSC	Dec-96	21879	3,000	100%	67%
LPH-09	DSC	Dec-95	07178	400	13%	9%
	DSC	Jan-96	07178	3,000	100%	67%
	DSC	Mar-96	07178	400	13%	9%
LPH-11	DSC	Feb-95	07202	1,500	50%	33%
	DSC	May-95	07202	1,500	50%	33%
Total Shipments to Fleet (30 months)				98,700		
Average Shipments per Month				3,290	4%	2%
Average Shipments per Year per Ship (based on 23 ships)				1,717	44%	31%
Estimated Use per Year for Fleet (based on 24 ships)				41,197		

In order to plan for future changes in make-up and size of the Fleet, the yearly usage rate was also calculated based on the percentage of the backup supplies and the total shipboard installed base. On a Fleet wide basis the Fleet will use nearly one-half of the quantity contained onboard as backup and nearly one-third of the total shipboard Halon 1211 (i.e., installed base and backup supplies) each year. While each ship class has a slightly different usage rate, the difference is not considered significant.

6.1.2 Usage Rate of Halon 1211 at Shore Side Facilities

As shown in Table 19, only seven Navy and three USMC shore side activities received Halon 1211 from the Reserve during the 30 month period. The Navy shore side activities received an average of 7,500 pounds per facility per year and the USMC shore side activities

received an average of 4,800 pounds of Halon 1211 per facility per year. The total quantity of Halon shipped to Navy and USMC facilities represents only 5 percent of the installed base and 1 percent of the total Halon 1211 at all shore side facilities.

It must be noted that the ten Navy USMC facilities that received Halon 1211 from the Reserve represent a small portion of the total number of facilities that are authorized to use Halon 1211. In order to extrapolate from the limited number of facilities it was necessary to estimate the total number of shore side activities that use Halon 1211. While it is possible that only 10 shore side activities used any appreciable Halon 1211 during the 30 month period, it seems more likely that the activities that did not order Halon 1211 from the Reserve were using internal backup/storage supplies or were receiving supplies from other sources to meet their needs. At some point, the internal or other supplies of Halon 1211 will be depleted, and all activities will need to rely on the Reserve. Within this work, it is assumed that the activities that will need Halon 1211 from the Reserve are those that contain Halon 1211 CFR equipment, i.e., the facilities previously used to develop the estimates of the installed base. Based on this assumption, the Navy has 50 shore based facilities (36 'east coast' and 14 'west coast'), and the USMC has 12 facilities that need Halon 1211 from the Reserve.

For the 50 shore side Navy facilities and the 12 USMC facilities, it is estimated that the usage rate of Halon 1211 is 53,150 and 19,200 pounds per year, respectively. The total shore side requirement is 72,150 pounds of Halon 1211 per year, representing 16 percent of the quantity currently available in the Reserve. In order to plan for future changes in facilities and Halon 1211 firefighting systems fielded, the yearly usage rate was also calculated based on the percentage of the installed base and the total quantity at shore side facilities. The average yearly usage rate is 7 percent of the installed base and 5 percent of the total quantity of Halon 1211 at shore side facilities.

Table 19. Shipments of Halon 1211 to Shore Based Activities

End-User Activity	Data Source	Month	UIC	Amount Shipped (Pounds)	Percent Installed Base	Percent of Total
USNS Roosevelt Roads	DSC	Apr-95	00389	3,000	ND	ND
NAS Fallon NV	DSC	Apr-95	60495	1,200	ND	ND
NAS Iwakuni	DSC	Apr-95	62613	1,500	ND	ND
NAS Le Moore	DSC	Feb-96	63042	1,500	ND	ND
NAS Le Moore CA	DSC	Jan-95	63042	3,000	ND	ND
NAS Oceana VA	DSC	Jan-96	60191	1,500	ND	ND
NAS Oceana VA	DSC	Apr-96	60191	1,500	ND	ND
NAS Whiting Field FL	DSC	Dec-95	60508	2,400	ND	ND
NAF El Centro, CA	DSC	Jul-95	60042	3,000	ND	ND
Total Shipments to Seven Navy Facilities (30 months)				18,600	-	-
Average Shipments to Seven Navy Facilities per Month				620	-	-
Average Shipments to Seven Navy Facilities per Year				7,440	-	-
Average Shipments per Navy Facility per Year				1,063	-	-
Average Use for Navy Facilities per Year (based on 50 facilities)				53,150	8%	6%
MWSS 371	DSC	Jun-96	09236	3,000	ND	ND
MCAS Jacksonville, NC	DSC	Apr-97	62573	4,500	ND	ND
MCAS Tustin CA	NAVICP	Feb-96	62535	3,000	ND	ND
MCAS Tustin CA	NAVICP	May-96	62535	1,500	ND	ND
Total Shipments to USMC Facilities				12,000	-	-
Average Shipments to 3 USMC Facilities per Month				400	-	-
Average Shipments to 3 USMC Facilities per Year				4,800	-	-
Average Shipments per USMC Facility per Year				1,600	-	-
Average Use for USMC Facilities per Year (based on 12 facilities)				19,200	5%	4%
Total Use Navy and USMC Shore Side Facilities per year				72,350	7%	5%

Note: ND – Insufficient data were available to determine the exact installed base and total supplies at each shore side facility.

6.1.3 Total Estimated Halon 1211 Usage Rate

The total Navy and USMC Halon 1211 usage rate calculated from the Reserve data is approximately 113,500 pounds per year. This represents 25 percent of the current quantity of

Halon 1211 in the Reserve. Based on this usage rate, the Reserve will meet the field needs of Halon 1211 for only 4 years.

6.2 Fire Incident Data Method

6.2.1 Reported Shore side Fire Incidents

The Fire Incident Data reported in Part II – Halon 1211 Requirements Review of this study were used to estimate the quantities of Halon 1211 required for CFR operations. The first set of data is from a previous study performed by NRL for the USAF [Leonard et al., 1992]. The data include all Navy reported incidents 1977-1991, all reported USAF reported incidents 1981-1991, and an estimate for the number of unreported fires 1987-1991. For ease in presentation, these data will be referred to as the 1977-1991 fire incident data. The second set of data includes all reported incidents using Halon 1211 for Fiscal Years 1993-1995 for the Army, Navy, USAF, and USMC. For ease in presentation, these data will be referred to as the 1993-1995 fire incident data. Both sets of data are for fire incidents on shore side facilities only and do not include any shipboard incidents.

In order to estimate the usage rate of Halon 1211 with these data, two separate items must be determined: (1) the average quantity of Halon 1211 reported per incident and (2) the average number of incidents per unit of time. From the 1977-1991 fire incident data, 176 separate uses of Halon 1211 were identified that also included the quantity of Halon 1211. The average quantity of Halon 1211 reported in the 176 incidents was 78 pounds per incident. This average includes (1) the use of Halon 1211 as the primary and secondary agent, (2) small and large fires, and (3) aircraft and non-aircraft incidents. To develop the average number of aircraft incidents using Halon 1211, a subset of the data representing the years 1984-1991 was used. Based on the data, it appears that wide spread use of Halon 1211 did not begin until approximately 1984. During 1984-1991, the Navy used Halon 1211 an average of 19 times per year.

From the 1993-95 fire incident data, a total of 201 incidents of Halon 1211 use were reported by the Army, Navy, USMC, USAF, and "other" fire departments with sufficient information to determine the quantity of Halon 1211 reported. The Navy accounted for 64 incidents and the USMC for 26 incidents. The average Halon 1211 use obtained from all 201 incidents was 107 pounds per incident. For the Navy alone, the average was 120 pounds of Halon 1211 per incident and for the USMC, the average was 82 pounds per incident, yielding a combined Navy/USMC average of 109 pounds per incident. On an annualized basis, the Navy averaged 21 incidents per year agreeing well with the 1977-1991 fire incident data and the USMC averaged 9 incidents per year. The resulting combined Navy/USMC average total was 30 incidents per year.

The estimate of the incidents per year for the Navy agree well for 1977-1991 data and the 1993-1995 data. However, the average quantity of Halon 1211 used per incident does not agree as well. It was not possible to determine if the difference in quantity used per incident was due to actual changes that represent operational or threat differences, or if it represents a degree of scatter in this method. To estimate the quantity of Halon 1211 used per year by the Navy and USMC, the average values from the 1993-1995 data are used in light of the fact that the more recent data may better represent the current fire threat, doctrine, and tactics. Based on the 30 combined Navy/USMC incidents per year and the 107 pounds average use of Halon 1211 per incident, the quantity of Halon 1211 used by the Navy and USMC per year is estimated by this method to be approximately 3,200 pounds per year. The decision to use the average use per incident value obtained from the total Navy, USMC, Army, and USAF data in lieu of the separate values from the Navy and USMC data was based on two factors: (1) no definitive difference in fire threat was identified between the Navy, USMC, and USAF, and (2) the total value was based on a higher sampling than the Navy and USMC data alone. (When the separate Navy and USMC quantities per incident are used, the estimate is approximately 3250 pounds per year. The difference in the two methods is approximately 1 percent, likely significantly less than the accuracy of the estimation.)

6.2.2 Unreported Shore Side Fire Incidents

The extremely low usage rate of Halon 1211 based on the fire incident data were not unexpected. It is recognized that a lack of uniformity exists between the services and the individual facilities regarding the criteria for reporting fire related incidents. As a result, not all fires are reported in the fire incident data. Previous estimates for the unreported incidents for the Navy indicated that on average four unreported fires per year per flight line can be expected to occur [Leonard et al., 1992]. Within the same study, a second estimate is cited that was developed by ARA, Inc. for the USAF. The ARA estimate found that three to four unreported incidents occurred per flight line per year for the USAF. It was also found that nearly all of these fires were small fires that used Halon 1211 as the extinguishing agent.

To determine the quantity of Halon 1211 used for unreported fires, three items were assumed: (1) the previous estimates of four unreported incidents per year per flight line remains valid, (2) all of the unreported incidents use Halon 1211, and (3) the number of flight lines that will have unreported fire incidents for the Navy and USMC can be estimated by those that contain major CFR equipment that contain Halon 1211. While unreported incidents would be expected to be smaller fires requiring lower than average Halon 1211 use per incident the data did not support this expectation. During the period 1984-1991, the average quantity of Halon 1211 used per incident for the unreported incidents was nearly identical to that in the reported incidents, 79 and 78 pounds of Halon 1211, respectively [Leonard et al., 1992]. Therefore, it was decided to use the average value obtained for the reported fire incidents 1993-1995 to estimate the quantities used in unreported incidents. Using the average value of 107 pounds per incident, the quantity of Halon 1211 used annually in unreported events at shore side flight lines is 26,536 pounds (i.e., 248 unreported incidents times 107 pounds per incident). The total Halon 1211 use for the 30 reported incidents and 248 unreported events is 29,750 pounds per year (i.e., 278 incidents/year times 107 pounds/incident). This usage rate represents approximately 3 percent of the installed base and 2 percent of the total Halon 1211 contained at shore side facilities.

6.2.3 Shipboard Fire Incidents

While no fire incident data were available for shipboard use of Halon 1211, it was possible to develop a first order approximation based on the shore side data. Of the major fire types identified in Part II - Halon 1211 Requirements Review, wheel/brake fires are not an expected shipboard fire type. In addition, different firefighting systems are available shipboard. Halon 1211 hand held extinguishers are not expected to be present. The main sources of Halon 1211 are the P-16 and the TAU-2H that can be viewed to fulfill a similar function as the flight line extinguisher and the shore based CFR vehicle. Using the 1993-1995 fire incident data, excluding wheel/brake fires and hand held extinguishers, the average quantity of Halon 1211 used is 109 pounds. The difference between the value based on removing wheel/brake fires and hand held extinguishers, and the value based on the total incidents may not be significant. For consistency, the value based on the total incidents (i.e., 107 pounds per incident) will be used.

In order to develop a first order estimate of the number of shipboard incidents that use Halon 1211 three items were assumed: (1) excluding wheel/brake incidents each flight deck is approximately equivalent to one flight line in terms of numbers of incidents, (2) the majority of wheel/brake fires are reported incidents, and (3) approximately one-half of the Fleet of the ships that contain Halon 1211 systems are deployed at any one time, i.e., six of 12 aircraft carriers and six of 12 Amphibious Assault Ships (LHA, LHD, and LPH), yielding an additional 12 equivalent flight lines. Using the same assumptions for unreported shore based fires, each of the twelve equivalent flight lines would be expected to incur four incidents each per year, resulting in an average use of approximately 5,100 pounds of Halon 1211 per year (i.e., 48 incidents/year times 107 pounds /incident). This usage rate represents approximately 5 percent of the backup quantities and 4 percent of the total Halon 1211 contained shipboard (excluding LCACs).

6.2.4 Total Halon Use Estimated from Fire Incident Data

Based on the shore side fire incident data, estimations of unreported shore side fire incidents, and extrapolations of shore side data to ship board incidents, the total Halon 1211 used to fight fires for the Navy and USMC is estimated to be approximately 35,000 pounds per year. This represents less than 8 percent of the total quantity of Halon 1211 currently available in the Reserve. Based on this usage rate alone, the current Reserve would be adequate to meet the field needs of Halon 1211 for approximately 13 years.

6.3 Halon 1211 Usage Projections

The two different estimating methods provide a Halon 1211 usage rate between 35,000 and 113,500 pounds per year. The estimate based on the fire incident data would not be expected to account for accidental releases, leakage, loss from maintenance action etc., and would represent the minimum quantity of Halon 1211 needed, i.e., the quantity needed to only fight fires. This estimation likely underestimates the usage rate. It is not reasonable to expect that the actual uses of Halon 1211 and hence the usage rate will be for fire events only. The estimate based on the quantities of Halon 1211 shipped from the Reserve would be expected to include the quantities needed to top off systems, replace quantities for accidental discharges, and although current policy prohibit it, the quantities, if any, used for training. This method does not account for quantities that may be turned into the Reserve as excess or for recycling as evidenced in the receipt of partially filled cylinders at DSCR. While this estimate would be expected to be higher to account for the non-fire uses, it may overestimate the usage. It must also be pointed out that both sets of estimates are based on peace-time data only. Increased operations as a result of combat operations would likely cause additional fires with a subsequent increase in Halon 1211 use.

The usage rates developed represent (1) between 8 percent and 22 percent of the current quantity of Halon 1211 in the Reserve, (2) 3 percent to 10 percent of the total Navy and USMC

installed base, (3) 4 percent to 11 of the backup quantities available shipboard /shore side, and (4) 2 percent to 6 percent of the total Bank of Navy/USMC Halon 1211.

6.4 Reserve Projections

Based on the estimated usage rate of Halon 1211, the current Reserve will be adequate to supply Halon 1211 to the field to support peace-time requirements for approximately 4 to 13 years. Several options exist to extend the period of time that Halon 1211 can be supplied to the field from existing Navy/USMC Bank.

(1) If the analysis for the Halon 1211 flight line extinguishers were correct, then one-half to two-thirds of the fielded systems are in excess of NATOPS requirements. An additional 400,000 to 500,000 pounds of Halon 1211 would be available for the Reserve. This would double the quantity of Halon 1211 and the length of time that the Reserve would support the peace-time requirements (i.e., an additional 4 to 13 years).

(2) If the 442,000 pounds of Halon 1211 in local storage/backup were used to support the field and not replaced, i.e., used to supplement the Reserve, approximately 4 to 13 years of additional supply could be obtained. This would serve to double the length of time that the Reserve could support the peace-time requirements.

(3) If both options above are feasible, then the quantities of Halon 1211 available to support the field are essentially three times that contained in the Reserve only (i.e., 1,350,000 pounds). The Bank of Halon 1211 would be able to support Navy/USMC peace-time requirements for approximately 12 to 39 years.

It is important to note that while the supplies of Halon 1211 may be adequate for this period of time, there is increased pressure on the developed countries around the world to identify

'excess' quantities of Halon 1211 and target them for destruction. This action may decrease the amount of time that it is considered 'acceptable' to continue to rely upon Halon 1211 to support aviation CFR operations.

Another factor that will affect the length of time that the current quantities of Halon 1211 will meet requirements is combat operations. Estimates of the quantity of Halon 1211 needed to support combat operations are more complex than for peace time operations. Estimates will depend upon the assumptions made for the size and the frequency of the conflicts. Since most of the Halon 1211 is used for small unreported fires, e.g., wet starts, small leaks, etc., it is not unreasonable to expect that the usage rate of Halon 1211 would increase dramatically as the result of increased stress on the aircraft and personnel. While it was not possible to estimate combat usage rates based on the available data, it is recommended that emphasis be placed on the upper end of the usage range in determining total quantities of Halon 1211 required. While this may result in overstating the peace-time requirements, it would serve as a 'place-holder' to account for the Halon 1211 needed to support combat operations until these requirements can be estimated.

7.0 CONCLUSIONS

The normally tracked Halon 1211 data are not sufficient to calculate either the total quantity of Halon 1211 within the Navy/USMC (i.e., Bank) or the Halon 1211 usage rate. In order to develop the size of the Bank and the historical usage rate, the normally tracked Halon 1211 data were supplemented with the following one-time data calls and other available data:

(1) A NAVFAC database that tracks all Navy CFR equipment by location [NAVFAC, 1996],

(2) Data provided by the east and west coast Fire Marshals [Darwin, 1996; Baldwin, 1997],

(3) A role-up quantity of the USMC P-19s,

(4) Data provided by the USMC Aviation Fire Protection and Recovery Officers [MCAS, 1997],

(5) SERDs for the P-16 and TAU-2H [SERD:P-16, 1996; SERD:TAU-2H, 1996],

(6) Fire Incident Data from the Naval Safety Center [NSC, 1997], and

(7) Estimates of fires not reported to the Navy Safety Center.

Based on the normally tracked data and the supplemental data, the total Navy Bank of Halon 1211 is estimated to be approximately 2,000,000 pounds:

(1) The Reserve contains approximately 23 percent (450,000 pounds) of the Bank,

(2) The installed base contains approximately 55 percent (1,100,000) of the Bank, and

(3) The local backup/storage supplies contain the remaining 22 percent (440,000) of the Bank of Halon 1211.

The historical usage rate was estimated by two different methods:

- The rate based on the fire incident data was estimated to be approximately 35,000 pounds of Halon 1211 per year, and
- The rate based on the Reserve shipments data was estimated to be approximately 113,500 pounds of Halon 1211 per year.

The usage rate based on the fire incident data versus the usage rate based on the Reserve shipment data suggests that the majority of the current use of Halon 1211 is not for fighting fires. It was not possible to determine the other uses of Halon 1211 with the available data.

Based on the results of Part I - Development of Halon 1211 Alternatives and Part II - Review of Halon 1211 Requirements of this study, the current Halon 1211 systems will need to remain in the field for the immediate future. Therefore, the two estimates for the historical peace-time usage rate are projected to apply for the foreseeable future. The Reserve is projected to be adequate to supply peace-time quantities of Halon 1211 for approximately 4 to 13 years.

Two potential sources exist to increase the quantity of Halon 1211 above that currently contained in the Reserve:

- It is possible that one-half to two-thirds of the fielded flight line extinguishers are in excess of the NATOPS requirements. It is projected that an additional 4 to 13 years of supply could be obtained; and
- It is also possible to use the local storage/backup supply of Halon 1211 without replacing it. This would provide an additional 4 to 13 years of supply.

If both of the above options are feasible, then the Bank of Halon 1211 is projected to be able to support Navy/USMC peace-time requirements for approximately 12 to 39 years:

- It is important to note that (1) while the supplies of Halon 1211 may be adequate for this period of time recent actions under the Montreal Protocol may decrease the amount of time that it is considered 'acceptable' to continue to rely upon Halon 1211.
- The projections for the adequacy of the Reserve do not account for any additional usage of Halon 1211 that may result from increased combat operations.

8.0 RECOMMENDATIONS

While it was not possible to estimate combat usage rates based on the available data, it is recommended that emphasis be placed on the upper end of the usage rate in determining total quantities of Halon 1211 required. While this may result in overstating the peace-time requirements, it would serve as a 'place-holder' to account for the Halon 1211 needed to support combat operations until better estimates can be developed.

The NATOPS requirements for the number of flight line extinguishers needed to support operations should be reviewed. Depending upon the results, action may need to be taken to turn-in any excess flight line extinguishers. The Halon 1211 should be returned to the Reserve.

In order to continue to track the Bank of Halon 1211 and to reduce the uncertainty of the usage projections, the following actions are recommended:

(1) The list of Navy CFR vehicles containing Halon 1211 should be updated annually from either the overall NAVFAC CFR database or by the east and west coast Fire Marshals;

(2) The USMC should be requested to provide similar data as contained in the Navy CFR database on an annual basis;

(3) The Navy Fire Marshals should be requested to report the quantities of flight line extinguishers, hand held extinguishers, and backup/storage supplies at each shore side installation once per year;

(4) Data on the cause of the Halon 1211 use should be developed (e.g., fire, accidental release, maintenance action, etc.) to determine if the usage rate may be reduced.

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Appendix A – Authorized User List for ODS Reserve
[Naval Supply Systems Command, 1995]

NAVSUP AUTHORIZED USER LIST FOR ODS RESERVE

UIC	ACTIVITY	ODS
N00406	FISC Puget Sound	All
N00612	FISC Charleston	All
N46450	FISC Charleston Kings Bay	All
N68836	FISC Jacksonville	All
N63649	FISC Jacksonville Mayport	All
V43538	FISC Jacksonville Roosevelt Roads	All
N00189	FISC Norfolk	All
N60138	FISC Norfolk Cheatham Annex	All
N44472	FISC Oakland	All
N00604	FISC Pearl Harbor	All
N68860	FISC Pensacola	All
N00244	FISC San Diego	All
N68972	FISC San Diego North Island	All
N68276	FISC San Diego Long Beach	All
N61119	FISC Guam	All
N62649	FISC Yokosuka	All
N00146	MCAS Cherry Point	All
N00205	NAVSUPACT New Orleans	All
N65995	NAVSUPACT Holy Loch	All
N62588	NAVSUPACT Naples	All
N66691	NAVSUPACT Souda Bay	All
N57049	NAVSUPACT Antiqua	All
N0417A	NAVSUPFAC Thurmont	All
N68539	NAVSUPFAC Diego Garcia	All
N00072	NAS New Orleans	All
N00188	NAS Norfolk	All
N00207	NAS Jacksonville	All
N00213	NAS Key West	All
N00216	NAS Corpus Christi	All
N00236	NAS Alameda	All
N00246	NAS North Island	All
N00262	NAS Quantico	All
N00296	NAS Moffett Field	All
N00334	NAS Barbers Point	All
N00421	NAS Patuxent River	All
N00620	NAS Whidbey Island	All
N00639	NAS Memphis	All
N60050	NAS El Toro	All
N60087	NAS Brunswick	All
N60191	NAS Oceana	All
N60200	NAS Cecil Field	All
N60259	NAS Miramar	All
N60462	NAS Adak	All
N60495	NAS Fallon	All
N60530	NAS China Lake	All
N62974	NAS Yuma	All
N62481	NAS Bermuda	All
N62507	NAS Atsugi	All
N62613	NAS Iwakuni	All
N62995	NAS Sigonella	All

UIC	ACTIVITY	ODS
N63026	NAS Futenma	All
N63032	NAS Keflavik	All
N63042	NAS LeMoore	All
N63043	NAS Meridian	All
N63126	NAS Point Mugu	All
N68335	NAS Lakehurst	All
N68709	NAS Mayport	All
N00389	NS Roosevelt Roads	All
N60028	NS Treasure Island	All
N60514	NS Guantanamo	All
N60201	NS Mayport	All
N62863	NS Rota	All

The above activities are NAVSUP authorized requisitioners for all ozone depleting substances (Halon 1202, Halon 1211, Halon 1301, CFC-11, CFC-12, CFC-114, CFC-500, and CFC-502) in the DOD ODS Reserve

NAVAIR AUTHORIZED USER LIST FOR ODS RESERVE

UIC	ACTIVITY	ODS
N62269	NAWCAD WARMINSTER PA	All
N68335	NAWCAD LAKEHURST NJ	All
N62376	NAWCAD TRENTON NJ	All
N00421	NAWCAD PATUXENT RIVER MD	All
N68626	NAVAVNMAINTOFF PATUXENT RIVER MD	All
N00163	NAWCAD INDIANAPOLIS IN	All
N63115	NAMTRAGRU MILLINGTON TN	All
N63093	NATTC MILLINGTON TN	All
N62849	NAESU PHILADELPHIA PA	All
N00383	ASO PHILADEPHIA PA	All
N65912	NAVSEACENLANT PORTSMOUTH VA	All
N65913	NAVSEACENPAC SAN DIEGO CA	All
N62995	NAS SIGONELLA IT	All
N62481	NAS BERMUDA	All
N60087	NAS BRUNSWICK ME	All
N60200	NAS CECIL FIELD FL	All
N00306	NAS GUANTANAMO BAY CU	All
N00207	NAS JACKSONVILLE FL	All
N63032	NAS KEFLAVIK IC	All
N00213	NAS KEY WEST FL	All
N68709	NAS MAYPORT FL	All
N00188	NAS NORFOLK VA	All
N60191	NAS OCEANA VA	All
N60462	NAS ADAK AK	All
N00236	NAS ALAMEDA CA	All
N00334	NAS BARBERS POINT HI	All
N60495	NAS FALLON NV	All
N61577	NAS AGANA GUAM	All
N63042	NAS LEMOORE CA	All
N00296	NAS MOFFETT FIELD CA	All
N00620	NAS WHIDBEY ISLAND WA	All
N60259	NAS MIRAMAR CA	All
N00246	NAS NORTH ISLAND CA	All
N60376	NAS CHASE FIELD BEEVILLE TX	All
N00216	NAS CORPUS CHRISTI TX	All
N60241	NAS KINGSVILLE TX	All
N00639	NAS MEMPHIS TN	All
N63043	NAS MERIDIAN MS	All
N60508	NAS WHITING FIELD NILTON FL	All
N00204	NAS PENSACOLA FL	All
N0428A	NAS PATUXENT RIVER MD	All
N0429A	NAS PT MUGU CA	All
N00215	NAS DALLAS TX	All
N00275	NAS GLENVIEW IL	All
N00196	NAS ATLANTA	All
N00206	NAS NEW ORLEANS LA	All
N00101	NAS SOUTH WEYMOUTH MA	All
N00158	NAS WILLOW GROVE PA	All
N62856	NAF LAJES AZ	All
N57032	NAF MILDENHALL UK	All

UIC	ACTIVITY	ODS
N62507	NAF ATSUGI JA	All
N60042	NAF EL CENTRO CA	All
N62494	NAF MIDWAY ISLAND	All
N68212	NAF MISAWA JA	All
N00274	NAF DETROIT MI	All
N00166	NAF WASHINGTON DC	All
N67604	MCAF CAMP PENDLETON CA	All
N00262	MCAF QUANTICO VA	All
N60169	MCAS BEAUFORT SC	All
N00146	MCAS CHERRY POINT NC	All
N63026	MCAS FUTEMA JA	All
N62613	MCAS IWAKUNI JA	All
N62573	MCAS NEW RIVER NC	All
N00318	MCAS KANEOHE BAY HI	All
N62535	MCAS TUSTIN CA	All
N62974	MCAS YUMA AZ	All
N60050	CGMCAS EL TORO CA	All
N65885	NAVAVNDEPOT ALAMEDA CA	All
N65923	NAVAVNDEPOT CHERRY POINT NC	All
N65886	NAVAVNDEPOT JACKSONVILLE FL	All
N65887	NAVAVNDEPOT NORFOLK VA	All
N65889	NAVAVNDEPOT PENSACOLA FL	All
N65888	NAVAVNDEPOT NORTH ISLAND CA	All
N67358	COMCABEAST CHERRY POINT NC	All
N67428	COMCABWEST EL TORO CA	All
N44323	AIMD NAF ATSUGI JA	All
N44488	AIMD NAF DETROIT MI	All
N44337	AIMD NAF DIEGO GARCIA	All
N44336	AIMD NAF EL CENTRO CA	All
N44334	AIDM NAF LAJES	All
N44333	AIMD NAF MIDWAY IS	All
N44332	AIDM NAF MILDENHALL UK	All
N44331	AIMD NAF MISAWA JA	All
N44330	AIMD NAF SIGONELLA IT	All
N44492	AIMD NAF WASHINGTON DC	All
N45459	AIMD NAF MAYPORT FL	All
N44373	AIMD NAF ROOSEVELT ROADS	All
N44374	AIMD NAF ROTA SP	All
N44322	AIMD NAS MIRAMAR CA	All
N44326	AIMD NAS SAN DIEGO CA	All
N44329	AIMD NAS WHIDBEY IS CA	All
N44311	AIMD NAS ALAMEDA CA	All
N44486	AIMD NAS ATLANTA GA	All
N44312	AIMD NAS BARBERS POINT HI	All
N44313	AIMD NAS BERMUDA	All
N44314	AIMD NAS BRUNSWICK ME	All
N44315	AIMD NAS CECIL FIELD FL	All
N44487	AIMD NAS DALLAS TX	All
N44317	AIMD NAS FALLON NV	All
N44489	AIMD NAS GLENVIEW IL	All
N44318	AIMD NAS GUANTANAMO BA	All

UIC	ACTIVITY	ODS
N44319	AIMD NAS JACKSONVILLE FL	All
N44335	AIMD NAS KEFLAVIK	All
N44320	AIMD NAS KEY WEST FL	All
N44321	AIMD NAS LEMOORE CA	All
N44310	AIMD NAS MIRIANA IS NAS AGANA GUAM	All
N44324	AIMD NAS MOFFETT FIELD CA	All
N44490	AIMD NAS NEW ORLEANS LA	All
N44325	AIMD NAS NORFOLK VA	All
N44327	AIMD NAS OCEANA VA	All
N44328	AIMD NAS POINT MUGU CA	All
N44491	AIMD NAS SOUTH WEYMOUTH MA	All
N44493	AIMD NAS WILLOW GROVE PA	All
N44402	AIMD NAS OKINAWA JA	All
N45994	AIMD NAS ADAK AK	All
V03360	CV60 USS SARATOGA	All
R03361	CV61 USS RANGER	All
R03362	CV62 USS INDEPENDENCE	All
R03363	CV63 USS KITTY HAWK	All
V03364	CV64 USS CONSTELLATION	All
V03365	CVN65 USS ENTERPRISE	All
V03366	CV66 USS AMERICA	All
V03367	CV67 USS KENNEDY	All
R03368	CVN68 USS NIMITZ	All
V03369	CVN69 USS EISENHOWER	All
R20993	CVN70 USS VINSON	All
V21247	CVN71 USS ROOSEVELT	All
R21297	CVN72 USS LINCOLN	All
V21412	CVN73 USS WASHINGTON	All
N21847	CNV74 USS STENNIS	All
N21853	CVN75 USS UNITED STATES	All
V07350	LPH2 USS IWO JIMA	All
R07351	LPH3 USS OKINAWA	All
V07352	LPH7 USS GUADALCANAL	All
V07178	LPH9 USS GUAM	All
R07198	LPH10 USS TRIPOLI	All
R07202	LPH11 USS NEW ORLEANS	All
V20009	LPH12 USS INCHON	All
R20050	LHA1 USS TARAWA	All
V20632	LHA2 USS SAIPAN	All
R20633	LHA3 USS BELLEAU WOOD	All
V20725	LHA4 USS NASSAU	All
R20748	LHA5 USS PELELIU	All
V21560	LHD1 USS WASP	All
R21533	LHD2 USS ESSEX	All
V21700	LHD3 USS KEARSARGE	All
N21808	LHD4 USS BOXER	All
N21879	LHD5 USS BATAAN	All

The above activities are NAVAIR authorized requisitioners for all ozone depleting substances (Halon 1202, Halon 1211, Halon 1301, CFC-11, CFC-12, CFC-114, CFC-500, and CFC-502) in the DOD ODS Reserve

USMC AUTHORIZED USER LIST FOR ODS RESERVE

UIC	ACTIVITY	ODS
M95464	COMMANDANT OF THE MARINE CORPS LPP-2	HALON 1211
M00146	MCAS, CHERRY POINT, NC	HALON 1211
M62573	MCAS, NEW RIVER, NC	HALON 1211
M60169	MCAS, BEAUFORT, SC	HALON 1211
M60050	MCAS, EL TORO, CA	HALON 1211
M67604	MCAS, CAMP PENDLETON, CA	HALON 1211
M62535	MCAS, TUSTIN, CA	HALON 1211
M00318	MCAS, KANOEHE BAY, HI	HALON 1211
M00260	MCAS, QUANTICO, VA	HALON 1211
M62613	MCAS, IWAKUNI, JA	HALON 1211
M63026	MCAS, FUTENMA, OKINAWA, JA	HALON 1211
M62974	MCAS, YUMA, AZ	HALON 1211
M09252	MARINE WNG SUP SQUADRON 171 1st MAW	HALON 1211
M09494	MARINE WNG SUP SQUADRON 172 1st MAW	HALON 1211
M09036	MARINE WNG SUP SQUADRON 174 1st MAW	HALON 1211
M09034	MARINE WNG SUP SQUADRON 271 2d MAW	HALON 1211
M09508	MARINE WNG SUP SQUADRON 272 2d MAW	HALON 1211
M09017	MARINE WNG SUP SQUADRON 273 2d MAW	HALON 1211
M52845	MARINE WNG SUP SQUADRON 274 2d MAW	HALON 1211
M09236	MARINE WNG SUP SQUADRON 371 3d MAW	HALON 1211
M09500	MARINE WNG SUP SQUADRON 372 3d MAW	HALON 1211
M00373	MARINE WNG SUP SQUADRON 373 3d MAW	HALON 1211
M00374	MARINE WNG SUP SQUADRON 374 3d MAW	HALON 1211
M08202	MARINE WNG SUP GROUP 47 4th MAW	HALON 1211
M48041	MAR WNG SUP SQD 471, DET A 4th MAW	HALON 1211
M48042	MAR WNG SUP SQD 471, DET B 4th MAW	HALON 1211
M48043	MAR WNG SUP SQD 471, DET C 4th MAW	HALON 1211
M48044	MAR WNG SUP SQD 471, DET D 4th MAW	HALON 1211
M67247	MARINE WNG SUP SQUADRON 471 4th MAW	HALON 1211
M48045	MAR WNG SUP SQD 472, DET A 4th MAW	HALON 1211
M48046	MAR WNG SUP SQD 472, DET B 4th MAW	HALON 1211
M48047	MAR WNG SUP SQD 472, DET C 4th MAW	HALON 1211
M09388	MARINE WNG SUP SQUADRON 472 4th MAW	HALON 1211
M48048	MAR WNG SUP SQD 473, DET A 4th MAW	HALON 1211
M67432	MAR WNG SUP SQD 473, DET B 4th MAW	HALON 1211
M48049	MAR WNG SUP SQD 473, DET C 4th MAW	HALON 1211
M58050	MAR WNG SUP SQD 473, DET D 4th MAW	HALON 1211
M67818	MARINE WNG SUP SQUADRON 473 4th MAW	HALON 1211
M48051	MAR WNG SUP SQD 474, DET A 4th MAW	HALON 1211
M48052	MAR WNG SUP SQD 474, DET B 4th MAW	HALON 1211
M48053	MAR WNG SUP SQD 474, DET C 4th MAW	HALON 1211
M48054	MAR WNG SUP SQD 474, DET D 4th MAW	HALON 1211
M48055	MAR WNG SUP SQD 474, DET E 4th MAW	HALON 1211
M67431	MARINE WNG SUP SQUADRON 474 4th MAW	HALON 1211
M47790	AVIATION GRND SUP ELEMENT, MWSG-37	HALON 1211
M90035	COMMARCORLOGBASES (CODE 835)	HALON 1211

The above activities are USMC authorized requisitioners for Halon 1211

Appendix B – Chief of Naval Operations Data [CNO, 1996]

5090
Ser N451I/6U598044
1 May 96

From: Chief of Naval Operations

Subj: OZONE-DEPLETING SUBSTANCE (ODS) DATA CALL

Ref: (a) CNO ltr Ser N451I/6U597797 of 31 Jan 96
(b) DUSD(ES) ltr of 29 Jan 96
(c) ODS Steering Committee meeting of 3 Apr 96
(d) CNO ltr Ser N451I/6U597891 of 22 Mar 96

Encl: (1) Required information for 1996 data call
(2) Required information for annual data call

1. Reference (a) issued an ozone-depleting substance (ODS) data call to Navy activities to support data requirements for the Department of Defense Measures of Merit and to provide information to Chief of Naval Operations (OPNAV), N45 on progress in eliminating ODSs. Reference (b) eliminated the Department of Defense Measures of Merit reporting requirement for ODSs. The changes to reference (a) described in this letter are based on the recommendations from reference (c) and subsequent coordination within the Navy ODS Steering Committee. This letter revises the data requirements of reference (a), extends the deadline for reporting to 1 September 1996, and establishes an annual reporting requirement.

2. Modifications to the original data call are identified in attachment (1). The data gathered will be used to validate funding requirements for direct fund activities and measure the progress of the Navy in meeting the 31 Dec 2000 deadline for phase out of non-mission critical applications of ODSs. Request that claimants provide the consolidated information requested in attachment 1 to OPNAV (N45) not later than 1 September 1996.

3. Attachment (2) identifies data required for annual calendar year reports to be submitted to OPNAV (N45) not later than 1 April of 1997-2001. Reports should provide information as of 1 January of the calendar year in which they are submitted. Note that the annual reporting requirement includes all air conditioning and refrigeration equipment as described in reference (d).

Subj: OZONE-DEPLETING SUBSTANCE (ODS) DATA CALL

4. OPNAV (N45) point of contact on this issue is Ms. Catharine Cyr, (703)602-5335, DSN 332-5335, email: cyrc@N4.opnav.navy.mil.

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DIRSSP (Code 2016)
ONR (Code 331)

Enclosure (1)

OZONE-DEPLETING SUBSTANCES
MEASURES OF MERIT DATA CALL

WEAPON SYSTEMS CONTAINING
CLASS I ODSs
AS OF 1 JAN 1996

	Platform	Platform	Platform	Platform	Platform
Number of systems #					
Type of Class I ODS installed					
Application–select from the following: Shipboard air conditioning and refrigeration, shipboard fire protection, aircraft environmental control, aircraft fire protection					
System capacity (lbs)					

Enclosure (1)

Air Conditioning and Refrigeration

CLASS I ODS
AIR CONDITIONING AND REFRIGERATION
AS OF 1 JAN 96

R-11 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-12 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-114 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-500 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-502 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-503 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-13 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-113 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

Enclosure (1)

FIRE PROTECTION EQUIPMENT

CLASS I ODS
INSTALLED FIRE PROTECTION EQUIPMENT
AS OF 1 JANUARY 1996

AGENT	Halon 1301
Number of systems	
Total pounds installed	

CLASS I ODS
MOBILE FIRE SUPPRESSION EQUIPMENT
AS OF 1 JANUARY 1996

Halon 1211

Number of units/systems	
Application description–select from the following: crash, fire, rescue vehicle, 150 pound flight line cylinder, handheld extinguishers, fire fighting vehicles, other–please describe)	
Unit/system capacity (lbs installed)	

Halon 1301

Number of units/systems	
Application description–select from the following: Handheld extinguishers, other–please describe)	
Unit/system capacity (lbs installed)	

Enclosure (1)

Solvents

CLASS I ODS SOLVENT APPLICATIONS
INVOLVING EQUIPMENT*
AS OF 1 JANUARY 1996

Type of solvent	CFC-113	Methyl chloroform	Carbon tetrachloride
Quantity of solvent installed in equipment (in gallons)			
Number of units			

* Equipment includes vapor degreasers, dip tanks, flushing rigs, ultrasonic cleaners, etc. Equipment does not include aerosol cans or wipe solvents.

Enclosure (2)

OZONE-DEPLETING SUBSTANCES
MEASURES OF MERIT DATA CALL

WEAPON SYSTEMS CONTAINING
CLASS I ODSs
AS OF 1 JAN XX

	Platform	Platform	Platform	Platform	Platform
Number of systems					
Type of Class I ODS installed					
Type of application– select from the following: shipboard air conditioning and refrigeration, shipboard fire protection, aircraft environmental control, aircraft fire protection					
System capacity (lbs)					

Enclosure (2)

Air Conditioning and Refrigeration

CLASS I ODS
AIR CONDITIONING
AS OF 1 JAN XX

R-11 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-12 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-114 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-500 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-113 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

Enclosure (2)

CLASS I ODS
REFRIGERATION
AS OF 1 JAN XX

R-12 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-500 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-502 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-503 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

R-13 Units	5-20 Tons	21-99 Tons	100+ Tons
Number of units			
Pounds refrigerant installed			

Enclosure (2)

FIRE PROTECTION EQUIPMENT

CLASS I ODS
INSTALLED FIRE PROTECTION EQUIPMENT
AS OF 1 JAN XX

AGENT[4]	Halon 1301
Number of systems	
Total pounds installed	

CLASS I ODS
MOBILE FIRE SUPPRESSION EQUIPMENT
AS OF 1 JANUARY 1996

Halon 1211

Number of units/systems	
Application description–select from the following: crash, fire, rescue vehicle, 150 pound flight line cylinder, handheld extinguishers, fire fighting vehicles, other–please describe)	
Unit/system capacity (lbs installed)	

Halon 1301

Number of units/systems	
Application description–select from the following: Handheld extinguishers, other–please describe)	
Unit/system capacity (lbs installed)	

Enclosure (2)

Solvents

CLASS I ODS SOLVENT APPLICATIONS INVOLVING EQUIPMENT* AS OF 1 JAN XX

Type of solvent	CFC-113	Methyl chloroform	Carbon tetrachloride
Quantity of solvent installed in equipment			
Number of units			

* Equipment includes vapor degreasers, dip tanks, flushing rigs, ultrasonic cleaners, etc. Equipment does not include aerosol cans or wipe solvents.

Appendix C – Inventories

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00046		720000	HEIL 25FR-842		93	72-01665			N00011	
N62470	N00046		720000	KOVATCH HH100		87	72-01607			N00011	
N62470	N00046		720000	KOVATCH HH100		87	72-01608			N00011	
N62470	N00046		720000	KOVATCH HH100		87	72-01610			N00011	
N62470	N00046		720000	MIL SPEC HP200		94	72-01668			N00011	
N62470	N00046		720000	MIL SPEC HP200		94	72-01669			N00011	
N62470	N00046		720000	MIL SPEC HP200		94	72-01670			N00011	
N62470	N00101	NAS S. Weymouth	716001	AMERTEK CF4000L		91	71-02860			N00072	0
N62470	N00101		716001	AMERTEK CF4000L		92	71-02914			N00072	0
N62470	N00101		732100	FIRE TRKSCF53325		80	73-02597			N00072	
N62470	N00101		732100	FIRE TRKSCF53325		80	73-02669			N00072	
N62470	N00101		710000	KOVATCH KFT6		87	71-02754			N00072	
N62470	N00101		716001	OSHKOSH P-19		85	71-02682			N00072	500
N62470	N00101		732100	PIERCE DASH		86	73-02783			N00072	
N62470	N00101		732100	SEAGRAVE MB23098		78	73-02517			N00072	
N62470	N00102		740000	KERSEY/AMC17-3710		74	74-00043			N00024	
N62470	N00102		732100	PIERCE DASH		86	73-02846			N00024	
N62470	N00102		732101	PIERCE DASH		94	73-01345			N00024	
N62470	N00102		732101	PIERCE DASH		94	73-01346			N00024	
N62470	N00104		732100	FIRE TRKSFTICF332550		80	73-02609			N00023	
N62470	N00104		735101	PIERCE ARROW		91	73-03016			N00023	
N62470	N00104		732100	WARD MFG WARDS 79		90	73-01341			N00023	
N62470	N00109	NWS Yorktown, VA	732101	EMER ONE PIERCE		95	73-01430			N00024	
N62470	N00109		734102	FIRE-TEC WF430250P		80	73-02642			N00024	
N62470	N00109		732100	FIRE TRKSCF53325		80	73-03091			N00024	
N62470	N00109		730000	FORD E150		96	71-03078			N00024	
N62470	N00109		722500	MACLEOD W2M6X4		68	72-01594			N00024	
N62470	N00109		716001	OSHKOSH P-19		85	71-02691			N00024	500
N62470	N00109		732100	PIERCE ARROW		87	73-02925			N00024	
N62470	N00109		732100	PIERCE ARROW		88	73-02951			N00024	
N62470	N00129		730000	CONESTOGACK-31003		85	71-02666			N00060	
N62470	N00129		732100	FIRE-TEC WF560/10008		81	73-03074			N00060	
N62470	N00129		732101	KOVATCH RENEGADE		94	73-01388			N00060	
N62470	N00129		735101	PIERCE ARROW		94	73-03102			N00060	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00129		740001	PIERCE ARROW		94	74-00071			N00060	
N62470	N00129		732100	SEAGRAVE MB23098		78	73-02506			N00060	
N62470	N00129		730000	WHEEL COAE-350		90	94-42395			N00060	
N62470	N00158	NAS Willow Grove	716001	AMERTEK CF4000L		90	71-02942			N00072	500
N62470	N00158		716001	AMERTEK CF4000L		92	71-02898			N00072	500
N62470	N00158		716001	AMERTEK CF4000L		92	71-02982			N00072	500
N62470	N00158		710000	GMC M1010		85	71-03034			N00072	
N62470	N00158		710000	GMC M1010		85	71-03035			N00072	
N62470	N00158		710201	KOVATCH KFT6		87	71-02756			N00072	200
N62470	N00158		716001	OSHKOSH P-19		86	71-02683			N00072	500
N62470	N00158		735101	PIERCE ARROW		94	73-03103			N00072	
N62470	N00158		732100	PIERCE DASH		86	73-02774			N00072	
N62470	N00158		732100	PIERCE DASH		86	73-02782			N00072	
N62470	N00161		730000	KOVATCH KFT6		87	71-02757			N00011	
N62470	N00161		732101	KOVATCH RENEGADE		95	73-01431			N00011	
N62470	N00161		735101	PIERCE ARROW		90	73-03017			N00011	
N62470	N00161		732100	SEAGRAVE MB23098		78	73-02525			N00011	
N62470	N00161		732100	WALTER NB750WGG		84	73-02763			N00011	
N62470	N00163		732200	CHRYSLER D-250		88	73-01347			N00019	
N62470	N00163		734103	FORD MTR F-700		82	73-01382			N00019	
N62470	N00164		734100	AMERICAN CJ70		84	94-14811			N00024	
N62470	N00164		734100	AMERICAN CJ70		84	94-14813			N00024	
N62470	N00164		734100	CHRYSLER W250		89	94-36197			N00024	
N62470	N00164		732000	FIRE TRKSFTI 2500		75	73-02439			N00024	
N62470	N00164		730000	GMC M1010		85	71-03048			N00024	
N62470	N00164		732200	KOVATCH KFT3		88	73-02871			N00024	
N62470	N00164		735101	PIERCE ARROW		87	73-02922			N00024	
N62470	N00164		732101	PIERCE DASH		94	73-01342			N00024	
N62470	N00164		732100	WALTER NB750WGG		84	73-02762			N00024	
N62470	N00167		732100	PIERCE ARROW		88	73-02870			N00024	
N62470	N00168		730000	FORD E350		90	71-03083			N00018	
N62470	N00168		732101	KOVATCH RENEGADE		95	73-01414			N00018	
N62470	N00168		732100	PIERCE ARROW		88	73-02874			N00018	
N62470	N00171	Naval District Washington	716001	AMERTEK CF4000L		91	71-02800			N00011	500

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00171	Naval District Washington	716001	AMERTEK CF4000L		91	71-02801			N00011	500
N62470	N00171		716001	AMERTEK CF4000L		91	71-02803			N00011	500
N62470	N00171		710000	FIRE-TEC C-30		83	71-02635			N00011	
N62470	N00171		740001	FIRE TRKSCFG2042		80	74-00053			N00011	
N62470	N00171		710000	KOVATCH ACR		87	71-02761			N00011	
N62470	N00171		732101	KOVATCH RENEGADE		94	73-01389			N00011	
N62470	N00171		732101	KOVATCH RENEGADE		94	73-03126			N00011	
N62470	N00171		716001	OSHKOSH P-19		85	71-02703			N00011	500
N62470	N00171		732100	PIERCE ARROW		86	73-02781			N00011	
N62470	N00171		732100	PIERCE ARROW		88	73-02979			N00011	
N62470	N00171		732100	SIMON 35580-90		95	73-03114			N00011	
N62470	N00171		732100	SIMON 35580-90		95	73-03117			N00011	
N62470	N00171		732100	WALTER NB750WGG		84	73-02720			N00011	
N62470	N00171		732100	WALTER NB750WGG		84	73-02721			N00011	
N62470	N00174		734103	CHEV C30		88	73-01379			N00024	
N62470	N00174		730000	GMC M1010		85	71-03055			N00024	
N62470	N00174		732100	PIERCE ARROW		88	73-02865			N00024	
N62470	N00174		735100	PIERCE LTA 10-320		88	73-02934			N00024	
N62470	N00174		732000	SEAGRAVE MB23098		78	73-02526			N00024	
N62470	N00174		732100	WARD MFG NWLTD1000		82	73-02699			N00024	
N62470	N00178	NSWC Dahlgren, VA	716001	AMERTEK CF4000L		92	71-02947			N00024	500
N62470	N00178		710000	CHRYSLER B-250		90	71-03013			N00024	
N62470	N00178		734103	GMC CHEV CV30943		88	73-03038			N00024	
N62470	N00178		735100	PIERCE ARROW		88	73-02997			N00024	
N62470	N00178		735101	PIERCE ARROW		91	73-03002			N00024	
N62470	N00178		732100	PIERCE DASH		86	73-02848			N00024	
N62470	N00178		732100	WALTER NB750WGG		84	73-02772			N00024	
N62470	N00181		740000	PIERCE ARROW		93	74-00070			N00024	
N62470	N00181		732100	PIERCE DASH		87	73-03036			N00024	
N62470	N00181		732100	PIERCE DASH		87	73-03037			N00024	
N62470	N00181		732101	PIERCE DASH		94	73-01343			N00024	
N62470	N00181		732101	PIERCE DASH		94	73-01344			N00024	
N62470	N00181		732100	SEAGRAVE MB23098		78	73-02524			N00024	
N62470	N00181		732100	SEAGRAVE MB23098		78	73-02534			N00024	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00189		733000	FIRE TRKSBPF1000		78	73-02567			N00023	
N62470	N00189		732100	FIRE TRKSCF53325		80	73-02667			N00023	
N62470	N00189		730000	GMC M1010		85	71-03056			N00023	
N62470	N00189		735101	PIERCE ARROW		94	73-03098			N00023	
N62470	N00193		734100	FIRE-TEC C7D042		80	73-02647			N00024	
N62470	N00193		732100	FIRE TRKSFTI2500		75	73-02458			N00024	
N62470	N00193		732100	FIRE TRKSFTI2500		76	73-02479			N00024	
N62470	N00193		732101	PIERCE SUBURBAN		86	73-02847			N00024	
N62470	N00193		732101	WALTER NB750WGG		84	73-02754			N00024	
N62470	N00193		732101	WALTER NB750WGG		84	73-02773			N00024	
N62470	N00204	NAS Pensacola, FL	716001	AMERTEK CF4000L		91	71-02811			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		91	71-02816			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		91	71-02864			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		91	71-02912			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		91	71-02916			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		93	71-02866			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		93	71-02963			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		93	71-02974			N00062	500
N62470	N00204		716001	AMERTEK CF4000L		93	71-03003			N00062	500
N62470	N00204		710000	CHEV BLAZER		93	71-03029			N00062	
N62470	N00204		710000	CHEV BLAZER		93	71-03030			N00062	
N62470	N00204		710000	CONESTOGACK31003		85	71-02668			N00062	
N62470	N00204		710000	GMC CHEV 2500		90	94-40729			N00062	
N62470	N00204		732101	KOVATCH RENEGADE		94	73-03130			N00062	
N62470	N00204		732101	KOVATCH RENEGADE		94	73-03131			N00062	
N62470	N00204		732101	KOVATCH RENEGADE		95	73-01361			N00062	
N62470	N00204		710200	MAXIM X-CR		88	71-02791			N00062	200
N62470	N00204		716001	OSHKOSH P-19		85	71-02694			N00062	500
N62470	N00204		716001	OSHKOSH P-19		85	71-02704			N00062	500
N62470	N00204		716001	OSHKOSH P-19		87	71-02726			N00062	500
N62470	N00204		732102	PIERCE ARROW		88	73-02876			N00062	
N62470	N00204		735100	PIERCE ARROW		91	73-03018			N00062	
N62470	N00204		740001	PIERCE ARROW		93	74-00068			N00062	
N62470	N00204		732100	SEAGRAVE MB23098		78	73-02516			N00062	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00204	NAS Pensacola, FL	732102	WALTER NB750WGG		84	73-02731			N00062	
N62470	N00204		732102	WALTER NB750WGG		84	73-02732			N00062	
N62470	N00206	NAS New Orleans, LA	716001	AMERTEK CF4000L		90	71-02922			N00072	500
N62470	N00206		716001	AMERTEK CF4000L		92	71-02962			N00072	500
N62470	N00206		716001	AMERTEK CF4000L		92	71-02975			N00072	500
N62470	N00206		710000	CONESTOGACK31003		85	71-02681			N00072	
N62470	N00206		732100	FIRE TRKSCF53325		80	73-02581			N00072	
N62470	N00206		732100	WALTER NB750WGG		84	73-02737			N00072	
N62470	N00206		732100	WARD MFG NWLTD1000		82	73-02693			N00072	
N62470	N00207	NAS Jacksonville, FL	716001	AMERTEK CF4000L		92	71-02847			N00060	500
N62470	N00207		716001	AMERTEK CF4000L		92	71-02945			N00060	500
N62470	N00207		716001	AMERTEK CF4000L		92	71-02951			N00060	500
N62470	N00207		716001	AMERTEK CF4000L		92	71-02953			N00060	500
N62470	N00207		716001	AMERTEK CF4000L		93	71-02977			N00060	500
N62470	N00207		716001	AMERTEK CF4000L		93	71-02979			N00060	500
N62470	N00207		710200	CHRYSLER W400		78	71-02527			N00060	
N62470	N00207		710202	CONESTOGACK-31003		85	71-02670			N00060	200
N62470	N00207		732000	FIRE TRKSFTI2500		75	73-02494			N00060	
N62470	N00207		710000	GMC M1010		85	71-03040			N00060	
N62470	N00207		732101	KOVATCH RENEGADE		95	73-01416			N00060	
N62470	N00207		732101	KOVATCH RENEGADE		95	73-01417			N00060	
N62470	N00207		732100	PIERCE DASH		86	73-02789			N00060	
N62470	N00207		740001	PIERCE REAR MOUNT		89	74-00064			N00060	
N62470	N00210	NTC Great Lakes	710202	KOVATCH KFT6		87	71-02755			N00062	200
N62470	N00210		732101	KOVATCH RENEGADE		94	73-01387			N00062	
N62470	N00210		732101	KOVATCH RENEGADE		95	73-01360			N00062	
N62470	N00210		732100	PIERCE ARROW		88	73-02873			N00062	
N62470	N00210		732100	PIERCE DASH		86	73-02840			N00062	
N62470	N00210		735101	PIERCE PIERCE		94	73-03121			N00062	
N62470	N00210		740001	SEAGRAVE HR07DB		84	74-00059			N00062	
N62470	N00213	NAS Key West, FL	710000	CHRYSLER W400 CUSTOM		77	71-02504			N00060	
N62470	N00213		732100	FIRE TRKSCF53325		80	73-02583			N00060	
N62470	N00213		732000	FIRE TRKSFTI2500		75	73-02457			N00060	
N62470	N00213		732101	KOVATCH RENEGADE		94	73-01390			N00060	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00213	NAS Key West, FL	732101	KOVATCH RENEGADE		95	73-01362			N00060	
N62470	N00213		716001	OSHKOSH P-19		86	71-02688			N00060	500
N62470	N00213		716000	OSHKOSH P-19		87	71-02735			N00060	500
N62470	N00213		716001	OSHKOSH P-19		87	71-02729		****	N00060	0
N62470	N00213		716001	OSHKOSH P-19		87	71-02730			N00060	500
N62470	N00213		732100	PIERCE ARROW		88	73-02943			N00060	
N62470	N00213		732100	SEAGRAVE MB23098		78	73-02507			N00060	
N62470	N00213		732100	WALTER NB750WGG		84	73-02739			N00060	
N62470	N00215	NAS Dallas, TX	732100	FIRE TRKSCF533250		80	73-02610			N00072	
N62470	N00215		718000	OSHKOSH M1500		76	71-02455			N00072	
N62470	N00215		718000	OSHKOSH M1500		77	71-02468			N00072	
N62470	N00215		718000	OSHKOSH M1500		77	71-02842			N00072	
N62470	N00216	NAS Corpus Christi, TX	716001	AMERTEK CF4000L		90	71-02894			N00062	500
N62470	N00216		716001	AMERTEK CF4000L		90	71-02904			N00062	500
N62470	N00216		716001	AMERTEK CF4000L		90	71-02948			N00062	500
N62470	N00216		716001	AMERTEK CF4000L		90	71-02957			N00062	500
N62470	N00216		716001	AMERTEK CF4000L		90	71-02966			N00062	500
N62470	N00216		716001	AMERTEK CF4000L		90	71-02969			N00062	500
N62470	N00216		716001	AMERTEK CF4000L		90	71-02973			N00062	500
N62470	N00216		710000	GMC CHEV K10516-BLAZ		93	71-03064			N00062	
N62470	N00216		710000	GMC CHEV K10516-BLAZ		93	71-03065			N00062	
N62470	N00216		710000	GMC CHEV K10516-BLAZ		93	71-03066			N00062	
N62470	N00216		710000	GMC CHEV K10516-BLAZ		93	71-03067			N00062	
N62470	N00216		710000	GMC CHEV K10516-BLAZ		93	71-03068			N00062	
N62470	N00216		732101	KOVATCH RENEGADE		95	73-01365			N00062	
N62470	N00216		732100	PIERCE ARROW		88	73-02960			N00062	
N62470	N00216		740001	PIERCE ARROW		89	74-00061			N00062	
N62470	N00216		732100	WALTER NB750WGG		84	73-02740			N00062	
N62470	N00275	NAS Glenview, IL	732100	GMC TRK 750MC		69	73-02112			N00025	
N62470	N00275		716000	OSHKOSH P-19		85	71-02709			N00025	500
N62470	N00275		732100	PIERCE ARROW		88	73-02878			N00025	
N62470	N00281		734102	CHRYSLER W350		85	73-01340			N00062	
N62470	N00281		730000	GMC M1010		85	71-03045			N00062	
N62470	N00281		732101	KOVATCH RENEGADE		94	73-01400			N00062	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr. USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00281		735100	PIERCE ARROW		91 73-03021			N00062	
N62470	N00281		732100	WALTER NB750WGG		84 73-02719			N00062	
N62470	N00389	NS Roosevelt Roads	722500	CHRYSLER M50A3		71 72-01664			N00060	
N62470	N00389		734102	EMER ONE B-140		96 73-03146			N00060	
N62470	N00389		734102	EMER ONE B-140		96 73-03147			N00060	
N62470	N00389		732000	FIRE TRKSFTI2500		75 73-02455			N00060	
N62470	N00389		732000	GSE/CORP MK1856		68 73-02049			N00060	
N62470	N00389		710200	KOVATCH KFT6		87 71-02770			N00060	200
N62470	N00389		732101	KOVATCH RENEGADE		94 73-03134			N00060	
N62470	N00389		732101	KOVATCH RENEGADE		95 73-01419			N00060	
N62470	N00389		732101	KOVATCH RENEGADE		95 73-01432			N00060	
N62470	N00389		718000	OSHKOSH M1500		76 71-02463			N00060	
N62470	N00389		716001	OSHKOSH P-19		87 71-02740			N00060	500
N62470	N00389		719001	OSHKOSH TA3000		92 71-02929			N00060	500
N62470	N00389		719001	OSHKOSH TA3000		92 71-02932			N00060	500
N62470	N00389		719001	OSHKOSH TA3000		92 71-02938			N00060	500
N62470	N00389		732100	PIERCE DASH		86 73-02803			N00060	
N62470	N00421	NAWC Paxtuxent River, MD	710000	GMC CK30		85 71-02674			N00019	
N62470	N00421		710000	GMC CHEV CK30		86 71-02771			N00019	
N62470	N00421		710000	GMC TRK CK30		85 71-03043			N00019	
N62470	N00421		732101	KOVATCH RENEGADE		95 73-01415			N00019	
N62470	N00421		716001	OSHKOSH P-19		85 71-02697			N00019	500
N62470	N00421		716001	OSHKOSH P-19		85 71-02701			N00019	500
N62470	N00421		716001	OSHKOSH P-19		87 71-02728			N00019	500
N62470	N00421		719001	OSHKOSH TA3000		92 71-02936			N00019	500
N62470	N00421		719001	OSHKOSH TA3000		92 71-02995			N00019	500
N62470	N00421		719001	OSHKOSH TA3000		92 71-02996			N00019	500
N62470	N00421		732100	PIERCE ARROW		88 73-02980			N00019	
N62470	N00421		732102	PIERCE ARROW		88 73-02882			N00019	
N62470	N00421		735100	PIERCE ARROW		91 73-03063			N00019	
N62470	N00639	NAS Memphis Millington	710200	KOVATCH KFT6		87 71-02772			N00062	200
N62470	N00639		716000	OSHKOSH P-19		85 71-02689			N00062	0
N62470	N00639		716001	OSHKOSH P-19		87 71-02736			N00062	0
N62470	N00639		716001	OSHKOSH P-19		87 71-02737			N00062	0

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N00639		732101	PIERCE ARROW		87	73-02937			N00062	
N62470	N00639		732101	PIERCE ARROW		88	73-02955			N00062	
N62470	N00639		732100	WARD MFG NWLTD1000		82	73-02692			N00062	
N62470	N00702		734102	FIRE TRKSTCE668		79	73-02561			N00069	
N62470	N00702		732100	PIERCE ARROW		88	73-02981			N00069	
N62470	N00702		732100	SEAGRAVE MB23098		78	73-02505			N00069	
N62470	N31188		732101	KOVATCH RENEGADE		94	73-03127			N00069	
N62470	N31188		732100	PIERCE ARROW		88	73-02904			N00069	
N62470	N31260		732000	FIRE TRKSFTI2500		76	73-02484			N00014	
N62470	N31260		732000	MCKERLIE M47C		73	73-02998			N00014	
N62470	N31260		732100	WALTER NB750WGG		85	73-02761			N00014	
N62470	N32960		734100	GMC MTMW 1500		85	73-01427			N00061	
N62470	N42237		734100	DARLEY WSF350		93	73-03111			N00060	
N62470	N42237		732101	KOVATCH RENEGADE		94	73-01391			N00060	
N62470	N42237		732101	KOVATCH RENEGADE		94	73-01403			N00060	
N62470	N42237		732101	KOVATCH RENEGADE		95	73-01363			N00060	
N62470	N42237		735101	PIERCE ARROW		91	73-03024			N00060	
N62470	N45534		732000	GSE/CORP MK1856		68	73-02055			N00024	
N62470	N45534		732000	GSE/CORP MK1856		68	73-02056			N00024	
N62470	N45534		732100	SEAGRAVE MB23098		78	73-02504			N00024	
N62470	N45534		732100	SEAGRAVE MB23098		78	73-02522			N00024	
N62470	N60087	NAS Brunswick, ME	716001	AMERTEK CF4000L		90	71-02907			N00060	500
N62470	N60087		716001	AMERTEK CF4000L		90	71-02970			N00060	500
N62470	N60087		716001	AMERTEK CF4000L		91	71-02861			N00060	500
N62470	N60087		734102	FIRE-TEC C7D042		80	73-02631			N00060	
N62470	N60087		734102	FIRE TRKSAT250-500		78	73-02553			N00060	
N62470	N60087		734102	GLOBAL W500/250P		88	73-02823			N00060	
N62470	N60087		710000	GMC M1010		85	71-03051			N00060	
N62470	N60087		732100	PIERCE ARROW		88	73-02886			N00060	
N62470	N60087		732100	PIERCE ARROW		88	73-02982			N00060	
N62470	N60087		732100	SEAGRAVE MB23098		78	73-02527			N00060	
N62470	N60087		732100	WALTER NB750WGG		84	73-02734			N00060	
N62470	N60191	NAS Oceana, VA Beach	716001	AMERTEK CF4000L		91	71-02804			N00060	500
N62470	N60191		716001	AMERTEK CF4000L		91	71-02809			N00060	500

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N60191	NAS Oceana, VA Beach	716001	AMERTEK CF4000L		91	71-02817			N00060	500
N62470	N60191		716001	AMERTEK CF4000L		91	71-02896			N00060	500
N62470	N60191		716001	AMERTEK CF4000L		91	71-02911			N00060	500
N62470	N60191		716001	AMERTEK CF4000L		93	71-02958			N00060	500
N62470	N60191		716001	AMERTEK CF4000L		93	71-02959			N00060	500
N62470	N60191		710000	FIRE-TEC C30		83	71-02636			N00060	
N62470	N60191		710000	GMC M1010		85	71-03041			N00060	
N62470	N60191		732100	PIERCE ARROW		88	73-02952			N00060	
N62470	N60191		732100	PIERCE DASH		86	73-02785			N00060	
N62470	N60191		732100	WALTER NB750WGG		84	73-02764			N00060	
N62470	N60200	NAS Cecil Field, FL	716001	AMERTEK CF4000L		90	71-02805			N00060	0
N62470	N60200		716001	AMERTEK CF4000L		90	71-02818			N00060	0
N62470	N60200		716001	AMERTEK CF4000L		90	71-02902			N00060	0
N62470	N60200		716001	AMERTEK CF4000L		90	71-02917			N00060	0
N62470	N60200		716001	AMERTEK CF4000L		91	71-02812			N00060	0
N62470	N60200		716001	AMERTEK CF4000L		93	71-02926			N00060	0
N62470	N60200		716001	AMERTEK CF4000L		93	71-02954			N00060	0
N62470	N60200		722500	BETA/SYS J8C064		82	72-01621			N00060	
N62470	N60200		710200	CHRYSLER W-40		77	71-02503			N00060	200
N62470	N60200		734102	FIRE-TEC DC15		80	73-02627			N00060	
N62470	N60200		734102	FIRE-TEC DC15		80	73-02635			N00060	
N62470	N60200		734102	FIRE-TEC DC15		80	73-02636			N00060	
N62470	N60200		732100	FIRE TRKSCF53325		80	73-02586			N00060	
N62470	N60200		710000	FMC CORP M-548		79	71-03081			N00060	
N62470	N60200		710000	FMC CORP M-548A		79	71-03082			N00060	
N62470	N60200		710000	GMC M1010		85	71-03037			N00060	
N62470	N60200		710000	GMC M1010		85	71-03062			N00060	
N62470	N60200		710000	GMC M1010		85	71-03063			N00060	
N62470	N60200		730000	KAISER 4610		78	73-02931			N00060	
N62470	N60200		732100	PIERCE ARROW		88	73-02887			N00060	
N62470	N60200		732100	PIERCE ARROW		88	73-02953			N00060	
N62470	N60201	Naval Station Mayport	732100	FIRE TRKSCF53325		80	73-02582			N00060	
N62470	N60201		732000	FIRE TRKSFTI2500		75	73-02467			N00060	
N62470	N60201		710000	GMC M1010		85	71-03038			N00060	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N60201	Naval Station Mayport	732101	KOVATCH RENEGADE		95	73-01364			N00060	
N62470	N60201		716001	OSHKOSH P-19		87	71-02741			N00060	500
N62470	N60201		716001	OSHKOSH P-19		87	71-02742			N00060	500
N62470	N60201		716001	OSHKOSH P-19		87	71-02751			N00060	500
N62470	N60201		732100	PIERCE ARROW		88	73-02954			N00060	
N62470	N60201		732100	WALTER NB750WGG		84	73-02738			N00060	
N62470	N60241	NAS Kingsville, TX	716001	AMERTEK CF4000L		90	71-02949			N00062	500
N62470	N60241		716001	AMERTEK CF4000L		90	71-02967			N00062	500
N62470	N60241		716001	AMERTEK CF4000L		91	71-02862			N00062	500
N62470	N60241		716001	AMERTEK CF4000L		91	71-02903			N00062	500
N62470	N60241		716001	AMERTEK CF4000L		91	71-02909			N00062	500
N62470	N60241		716001	AMERTEK CF4000L		92	71-02960			N00062	500
N62470	N60241		734100	CHEV K31003		94	73-01349			N00062	
N62470	N60241		734102	FIRE-TEC WF430250		80	73-02632			N00062	
N62470	N60241		710000	KOVATCH KFT6		87	71-02763			N00062	
N62470	N60241		732101	KOVATCH RENEGADE		94	73-03135			N00062	
N62470	N60241		732101	KOVATCH RENEGADE		95	73-01434			N00062	
N62470	N60241		710000	MAXIM X-CR		88	71-02792			N00062	
N62470	N60241		732100	WALTER NB750WGG		84	73-02735			N00062	
N62470	N60478		734102	CHRYSLER W-20		77	73-03089			N00024	
N62470	N60478		734103	CHRYSLER W-20		77	73-03094			N00024	
N62470	N60478		735101	PIERCE ARROW		88	73-02987			N00024	
N62470	N60478		732100	PIERCE DASH		86	73-02831			N00024	
N62470	N60478		732100	PIERCE DASH		87	73-02869			N00024	
N62470	N60478		732100	WALTER NB750WGG		84	73-02769			N00024	
N62470	N60508	NAS Whiting Field, Milton FL	716001	AMERTEK CF4000L		90	71-02908			N00062	500
N62470	N60508		716001	AMERTEK CF4000L		90	71-02952			N00062	500
N62470	N60508		716001	AMERTEK CF4000L		90	71-02972			N00062	500
N62470	N60508		716001	AMERTEK CF4000L		90	71-02976			N00062	500
N62470	N60508		710202	FIRE-TEC CK30943		83	71-02637			N00062	200
N62470	N60508		710202	FIRE-TEC CK30943		83	71-02638			N00062	200
N62470	N60508		710202	FIRE-TEC CK30943		83	71-02639			N00062	200
N62470	N60508		710202	FIRE-TEC CK30943		83	71-02641			N00062	200
N62470	N60508		710202	FIRE-TEC CK30943		83	71-02642			N00062	200

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N60508	NAS Whiting Field, Milton FL	710000	GMC M1010		85	71-03050			N00062	
N62470	N60508		710202	GMC CHEV CK31003		85	71-02677			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02775			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02776			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02777			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02778			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02779			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02780			N00062	200
N62470	N60508		710200	GMC CHEV KFT6		87	71-02781			N00062	200
N62470	N60508		710202	GMC CHEV X-CR		88	71-02787			N00062	200
N62470	N60508		710202	GMC CHEV X-CR		88	71-02788			N00062	200
N62470	N60508		710202	GMC CHEV X-CR		88	71-02789			N00062	200
N62470	N60508		710202	GMC CHEV X-CR		88	71-02790			N00062	200
N62470	N60508		710202	INTL HVR 4800DT466		95	71-03020			N00062	
N62470	N60508		710202	INTL HVR 4800DT466		95	71-03021			N00062	
N62470	N60508		710202	INTL HVR 4800DT466		95	71-03023			N00062	
N62470	N60508		710202	INTL HVR 4800DT466		95	71-03025			N00062	
N62470	N60508		735101	PIERCE ARROW		94	73-03104			N00062	
N62470	N60508		732100	PIERCE ARROW		88	73-02883			N00062	
N62470	N60508		732100	WALTER NB750WGG		84	73-02736			N00062	
N62470	N60514		734100	DARLEY WSF350 XL		93	73-03112			N00060	
N62470	N60514		722500	ELLIOTT EMW-2000 WT		88	72-01613			N00060	
N62470	N60514		734100	FIRE-TEC DC15AF250N		83	73-03067			N00060	
N62470	N60514		734103	FIRE-TEC DC15AF25ON		83	73-03053			N00060	
N62470	N60514		722500	INTL HVR PAYSTAR		87	72-01671			N00060	
N62470	N60514		710000	KOVATCH KFT6		87	71-02765			N00060	
N62470	N60514		732101	KOVATCH RENEGADE		94	73-01406			N00060	
N62470	N60514		732101	KOVATCH RENEGADE		95	73-01420			N00060	
N62470	N60514		718000	OSHKOSH M1500		76	71-02444			N00060	
N62470	N60514		718000	OSHKOSH M1500		76	71-02465			N00060	
N62470	N60514		719001	OSHKOSH TA-3000		92	71-02997			N00060	
N62470	N60514		719001	OSHKOSH TA-3000		92	71-02998			N00060	
N62470	N60514		732100	PIERCE ARROW		88	73-02983			N00060	
N62470	N60514		735101	PIERCE ARROW		90	73-03026			N00060	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr. USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N60514		732100	PIERCE DASH		86 73-02804			N00060	
N62470	N60514		732100	PIERCE DASH		86 73-02805			N00060	
N62470	N61165		740000	KERSEY/AMCUSTOM		74 74-00044			N00025	
N62470	N61165		732102	PIERCE SUBURBAN		86 73-02787			N00025	
N62470	N61165		732100	SEAGRAVE MB23098		78 73-02529			N00025	
N62470	N61165		732100	WALTER NB750WGG		84 73-02722			N00025	
N62470	N61165		732102	WALTER NB750WGG		84 73-02723			N00025	
N62470	N61331	NSWC Panama City, FL	710000	MAXIM X-CR		88 71-02783			N00024	
N62470	N61331		716001	OSHKOSH P-19		87 71-02743			N00024	500
N62470	N61331		732100	PIERCE ARROW		87 73-02866			N00024	
N62470	N61331		732100	WARD MFG WARDS 79		82 73-02691			N00024	
N62470	N61414	NAB Little Creek	710200	KOVATCH KFT4		86 71-02720			N00060	200
N62470	N61414		732101	KOVATCH RENEGADE		95 73-01371			N00060	
N62470	N61414		732100	PIERCE ARROW		88 73-02956			N00060	
N62470	N61414		732100	WALTER NB750WGG		84 73-02741			N00060	
N62470	N62269		710000	MAXIM X-CR		88 71-02786			N00019	
N62470	N62269		735101	PIERCE ARROW		91 73-03066			N00019	
N62470	N62269		732100	SEAGRAVE MB23098		78 73-02511			N00019	
N62470	N62588	NSA Naples	716001	OSHKOSH P-19		85 71-02695			N00061	500
N62470	N62588		716001	OSHKOSH P-19		85 71-02696			N00061	500
N62470	N62588		716001	OSHKOSH P-19		87 71-02747			N00061	500
N62470	N62588		732100	PIERCE ARROW		88 73-02892			N00061	
N62470	N62588		732100	PIERCE ARROW		88 73-02957			N00061	
N62470	N62588		732100	PIERCE DASH		86 73-02809			N00061	
N62470	N62604		732102	PIERCE ARROW		88 73-02875			N00025	
N62470	N62604		732102	PIERCE DASH		86 73-02788			N00025	
N62470	N62604		730000	UNKNOWN UNKNOWN		96 73-03150			N00025	
N62470	N62661	NETC Newport	710202	GMC CHEV CK30		85 71-02679			N00062	200
N62470	N62661		732101	KOVATCH RENEGADE		94 73-01392			N00062	
N62470	N62661		732101	KOVATCH RENEGADE		94 73-01393			N00062	
N62470	N62661		733101	PIERCE ARROW		94 73-01358			N00062	
N62470	N62661		732102	PIERCE DASH		86 73-02839			N00062	
N62470	N62661		732100	SEAGRAVE MB23098		78 73-02518			N00062	
N62470	N62661		740000	SEAGRAVE SR20756		78 74-00047			N00062	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N62688	US Naval Station Norfolk, VA	710000	FORD MOTRF350		90	71-03017			N00060	
N62470	N62688		710000	GMC M1010		85	71-03042			N00060	
N62470	N62688		710000	GMC M1010		85	71-03046			N00060	
N62470	N62688		732101	KOVATCH RENEGADE		94	73-01408			N00060	
N62470	N62688		732101	KOVATCH RENEGADE		94	73-03092			N00060	
N62470	N62688		732101	KOVATCH RENEGADE		94	73-03128			N00060	
N62470	N62688		732101	KOVATCH RENEGADE		94	73-03129			N00060	
N62470	N62688		732101	KOVATCH RENEGADE		95	73-01372			N00060	
N62470	N62688		732101	KOVATCH RENEGADE		95	73-01373			N00060	
N62470	N62688		719500	OSHKOSH A/S32P-15		83	71-02650			N00060	
N62470	N62688		716001	OSHKOSH P-19		85	71-02687			N00060	500
N62470	N62688		716001	OSHKOSH P-19		86	71-02692			N00060	500
N62470	N62688		716001	OSHKOSH P-19		87	71-02748			N00060	500
N62470	N62688		716001	OSHKOSH P-19		87	71-02749			N00060	500
N62470	N62688		719001	OSHKOSH TA3000		92	71-02930			N00060	500
N62470	N62688		719001	OSHKOSH TA3000		92	71-02937			N00060	500
N62470	N62688		719001	OSHKOSH TA3000		92	71-02990			N00060	500
N62470	N62688		740002	PIERCE ARROW		89	74-00062			N00060	
N62470	N62688		735101	PIERCE ARROW		94	73-03106			N00060	
N62470	N62688		735101	PIERCE ARROW		94	73-03107			N00060	
N62470	N62688		730000	PIERCE DASH		86	73-02825			N00060	
N62470	N62863	NS Rota	716001	OSHKOSH P-19		85	71-02684			N00061	500
N62470	N62863		719001	OSHKOSH TA3000		92	71-02933			N00061	500
N62470	N62863		719001	OSHKOSH TA3000		92	71-02940			N00061	500
N62470	N62863		719001	OSHKOSH TA3000		92	71-02991			N00061	500
N62470	N62863		732100	PIERCE ARROW		88	73-02958			N00061	
N62470	N62863		732100	PIERCE ARROW		88	73-02959			N00061	
N62470	N62863		732100	PIERCE DASH		86	73-02842			N00061	
N62470	N62863		734100	UNKNOWN UNKNOWN		96	73-03153			N00061	
N62470	N62995	NAS Sigonella	732000	FIRE TRKSFTI2500		76	73-02491			N00061	
N62470	N62995		722500	GMC TRK JM7670A		67	72-01600			N00061	
N62470	N62995		732101	KOVATCH RENEGADE		95	73-01435			N00061	
N62470	N62995		716001	OSHKOSH M1500		76	71-02457			N00061	
N62470	N62995		716000	OSHKOSH P-19		85	71-02686			N00061	500

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N62995		719001	OSHKOSH TA3000		92	71-02934			N00061	500
N62470	N62995		719001	OSHKOSH TA3000		92	71-02941			N00061	500
N62470	N62995		719001	OSHKOSH TA3000		92	71-02989			N00061	500
N62470	N62995		732100	PIERCE ARROW		88	73-02895			N00061	
N62470	N62995		732100	PIERCE DASH		86	73-02808			N00061	
N62470	N62995		732100	PIERCE DASH		86	73-02843			N00061	
N62470	N63032	NAS Keflavik, Iceland	710200	FIRE-TEC DC15		83	71-03014			N00060	200
N62470	N63032		710200	FORD MTR F-400		95	71-03024			N00060	0
N62470	N63032		710000	GMC M1010		85	71-03058			N00060	
N62470	N63032		710200	GMC TRK CK1003		87	71-02760			N00060	200
N62470	N63032		732101	KOVATCH RENEGADE		94	73-03136			N00060	
N62470	N63032		732101	KOVATCH RENEGADE		95	73-01436			N00060	
N62470	N63032		722500	MACLEOD W2M6X4		68	72-01605			N00060	
N62470	N63032		710200	NAVISTAR 1854		83	71-02985			N00060	200
N62470	N63032		719500	OSHKOSH A/S 32 P-15		85	71-02648			N00060	
N62470	N63032		719001	OSHKOSH TA3000		92	71-02928			N00060	500
N62470	N63032		719001	OSHKOSH TA3000		92	71-02935			N00060	500
N62470	N63032		719001	OSHKOSH TA3000		92	71-02988			N00060	500
N62470	N63032		719001	OSHKOSH TA3000		92	71-02994			N00060	500
N62470	N63032		732100	PIERCE ARROW		88	73-02896			N00060	
N62470	N63032		740000	PIERCE ARROW		95	74-00072			N00060	
N62470	N63032		732100	SEAGRAVE MB23098		78	73-02536			N00060	
N62470	N63038		732101	KOVATCH RENEGADE		95	73-01374			N00063	
N62470	N63038		732100	PIERCE ARROW		88	73-02897			N00063	
N62470	N63043	NAS Meridian, MS	716001	AMERTEK CF4000L		91	71-02802			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		91	71-02848			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		91	71-02855			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		91	71-02856			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		91	71-02900			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		91	71-02918			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		92	71-02943			N00062	500
N62470	N63043		716001	AMERTEK CF4000L		92	71-02965			N00062	500
N62470	N63043		734102	FIRE-TEC WF430250P		80	73-02634			N00062	
N62470	N63043		710000	GMC TRK CD30903		84	71-03052			N00062	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N63043		710000	GMC TRK CD30903		84	71-03054			N00062	
N62470	N63043		710000	GMC TRK CD30903		85	71-03053			N00062	
N62470	N63043		735100	PIERCE ARROW		90	73-03027			N00062	
N62470	N63043		732100	PIERCE DASH		86	73-02791			N00062	
N62470	N63043		732100	SEAGRAVE MB23098		78	73-02514			N00062	
N62470	N63043		722500	UNKNOWN UNKNOWN		96	72-01672			N00062	
N62470	N63073		732100	BEDFORD SLR1DC0		82	73-02672			N00069	
N62470	N63073		732100	VOL MICH FL4-6		91	73-03054			N00069	
N62470	N63821	Naval Undersea Warfare Center Andros Island, Bahamas	732100	EMER ONE C7D042		85	73-02917			N00024	
N62470	N63821	Naval Undersea Warfare Center Andros Island, Bahamas	716001	OSHKOSH P-19		85	71-02702			N00024	500
N62470	N63821	Naval Undersea Warfare Center Andros Island, Bahamas	716001	OSHKOSH P-19		87	71-02734			N00024	500
N62470	N63821	Naval Undersea Warfare Center Andros Island, Bahamas	732100	SIMON 35580-90		92	73-03115			N00024	
N62470	N63891		732101	KOVATCH RENEGADE		95	73-01418			N00069	
N62470	N63891		732100	PIERCE DASH		86	73-02786			N00069	
N62470	N65540		732100	FIRE TRKSCF53325		80	73-02608			N00024	
N62470	N65540		732100	FIRE TRKSCF53325		80	73-02666			N00024	
N62470	N65540		732000	FIRE TRKSFTI 2500		75	73-02454			N00024	
N62470	N65540		710000	GMC M1010		85	71-03039			N00024	
N62470	N65540		730000	GMC TRK WF43025OP		80	73-02633			N00024	
N62470	N65540		740001	KAITLIN WLR100		79	74-00050			N00024	
N62470	N65540		732100	PIERCE DASH		87	73-02864			N00024	
N62470	N65540		740001	PIERCE PFT1060		80	74-00057			N00024	
N62470	N65540		732100	SEAGRAVE MB23098		78	73-02528			N00024	
N62470	N65928		732100	PIERCE ARROW		88	73-02902			N00062	
N62470	N65928		732100	PIERCE DASH		86	73-02845			N00062	
N62470	N65928		732100	SEAGRAVE MB23098		78	73-02515			N00062	
N62470	N66691	NSA Souda Bay	710200	CHEV AS32		84	71-03084			N00061	200
N62470	N66691		719000	CHEV C30		84	71-03085			N00061	
N62470	N66691		719001	OSHKOSH TA3000		92	71-03000			N00061	500
N62470	N66691		719001	OSHKOSH TA3000		92	71-03001			N00061	500

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N66691	NSA Souda Bay	719001	OSHKOSH TA3000		92	71-03002			N00061	500
N62470	N66691		719001	OSHKOSH TA3000		92	71-03027			N00061	500
N62470	N66691		734100	PIERCE P-8		82	73-01380			N00061	
N62470	N66691		732100	WALTER NB750WGG		84	73-02748			N00061	
N62470	N66754		730000	CHEV M-1010		85	71-03059			N00069	
N62470	N66754		730000	CHRYSLER RAM 250		94	73-03159			N00069	
N62470	N66754		732101	KOVATCH RENEGADE		94	73-01394			N00069	
N62470	N66754		732100	PIERCE ARROW		88	73-02898			N00069	
N62470	N66754		734101	WARD 79 NWLTD50		83	73-02716			N00069	
N62470	N68335	NAWC Lakehurst, NJ	710000	CHEV 43 DATC		84	71-03036			N00019	
N62470	N68335		734103	CHRYSLER W-250		90	94-41553			N00019	
N62470	N68335		734103	CHRYSLER W250		90	94-41555			N00019	
N62470	N68335		732100	FIRE TRKSCF53325		80	73-02595			N00019	
N62470	N68335		732100	FIRE TRKSFT12500-500		75	73-02465			N00019	
N62470	N68335		710202	FORD MTR F80		96	71-03075			N00019	
N62470	N68335		710000	GIBSON W400		78	71-02523			N00019	
N62470	N68335		716001	OSHKOSH P-19		85	71-02712			N00019	500
N62470	N68335		716001	OSHKOSH P-19		85	71-02714			N00019	500
N62470	N68335		716001	OSHKOSH P-19		86	71-02722			N00019	500
N62470	N68335		716001	OSHKOSH P-19		87	71-02782			N00019	500
N62470	N68335		735100	PIERCE ARROW		88	73-02923			N00019	
N62470	N68335		732101	PIERCE DASH		94	73-01377			N00019	
N62470	N68335		732100	PIERCE DASH R		96	73-03149			N00019	
N62470	N68836		722500	FORD MOTRF500		67	71-02129			N00023	
N62470	N68836		722500	FORD MOTRF500		67	71-02130			N00023	
N62470	N68890		730000	GMC M1010		85	71-03049			N00060	
N62470	N68890		732101	KOVATCH RENEGADE		94	73-03093			N00060	
N62470	N68890		735101	PIERCE ARROW		91	73-03065			N00060	
N62470	N68891		734102	FIRE-TEC T1GMCC7D042		80	73-02638			N00060	
N62470	N68891		732100	FIRE TRKSCF53325		80	73-02585			N00060	
N62470	N68891		732101	KOVATCH RENEGADE		94	73-01395			N00060	
N62470	N68891		735101	PIERCE ARROW		91	73-03069			N00060	
N62470	N68891		734100	UNKNOWN M35A2C		89	73-03141			N00060	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62470	N83447	NAS Fort Worth, TX	716001	AMERTEK CF4000L		90	71-02961			N00072	500
N62470	N83447		716001	AMERTEK CF4000L		91	71-02808			N00072	500
N62470	N83447		716001	AMERTEK CF4000L		91	71-02815			N00072	500
N62470	N83447		716001	AMERTEK CF4000L		92	71-02906			N00072	500
N62470	N83447		716001	AMERTEK CF4000L		92	71-02950			N00072	500
N62470	N83447		710000	CHEV CK30		86	71-03077			N00072	
N62470	N83447		710000	CHEV CK30		87	71-03076			N00072	
N62470	N83447		710000	GMC M1010		85	71-03044			N00072	
N62470	N83447		718000	OSHKOSH M1500		77	71-02481			N00072	
N62470	N83447		732100	PIERCE ARROW		88	73-02985			N00072	
N62470	N83447		732100	PIERCE DASH		86	73-02790			N00072	
N62470	N83447		732101	SEAGRAVE MB23098		78	73-01428			N00072	
N62470	N83447		732101	SEAGRAVE MB23098		78	73-01429			N00072	
N62470	N83447		732100	WALTER NB750WGG		84	73-02726			N00072	
N62470	N83447		732100	WARD 79 NWLTD1000		82	73-02688			N00072	
N62470	N91571		734100	FORD F350		89	73-02994			N00024	
N62470	N91571		732100	GMC TRK OLF1004		81	73-02690			N00024	
N62470	N91961		732000	FIRE TRKS750MC		72	73-02339			N00019	
N62470	N91961		732100	SIMON 35580-90		95	73-03116			N00019	
N62470	N91961		732100	WALTER NB750WGG		85	73-02766			N00019	
N62470	N91982		732100	FIRE TRKSCF53325		80	73-02681			N00039	
N62470	N92782	NWIRP Bloomfield	716001	OSHKOSH P-19		85	71-02690			N00019	500
N62470	N95918		734103	CHRYSLER W250		86	73-03148			N00019	
N62470	N95918		732100	FIRE TRKSCFG 2042		80	73-02604			N00019	
N62470	N95918		732100	WALTER NB750WGG		87	73-02767			N00019	
N62470	N96095		732100	SIMON 35580-90		95	73-03113			N00019	
N62470	N96095		719001	WALTER P-2		81	71-02623			N00019	
N62470	NX1634		710000	CHEV M1010		85	71-03071			N00060	
N62470	NX1634		710000	CHEV M1010		85	71-03072			N00060	
N62470	NZZ909		732000	FIRE TRKSFTI 2270		74	73-02449			N00025	
N62470	NZZ909		719500	OSHKOSH A/S32P-15		84	71-02649			N00025	
N62470	NZZ909		740000	SEAGRAVE SR20756		78	74-00048			N00025	
N62477	N63319		732000	NAVSTR V206		62	73-02453			N00030	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
		NSC (Naval Supply Center)									
N62477	N68860	Pensacola, FL	710200	CHEV CK31403		82	73-03052			N00023	200
N62477	N68860		732200	FORD F-700		89	73-02995			N00023	
N62477	N68860		710200	FORD MOTRF600		79	73-02670			N00023	200
N62477	N68860		710200	MACK M1090		70	73-02422			N00023	
N62477	N68860		710200	MACK M1092		70	73-02423			N00023	
N62477	N68860		716000	OSHKOSH P-19		86	71-02796			N00023	500
N62477	N68860		732000	UNKNOWN UNK		94	73-03140			N00023	
N62742	N00228		732102	FIRE TRKSFTICF332550		80	73-02602			N00023	
N62742	N00228		732101	PIERCE E310504		86	73-02784			N00023	
N62742	N00228		735101	PIERCE PIERCE		91	73-03019			N00023	
N62742	N00236	NAS Alameda, CA	716001	AMERTEK CF4000L		91	71-02807			N00070	500
N62742	N00236		716001	AMERTEK CF4000L		92	71-02919			N00070	500
N62742	N00236		716001	AMERTEK CF4000L		92	71-02921			N00070	500
N62742	N00236		740001	CANADIAN CFG2042		80	74-00054			N00070	
N62742	N00236		710200	CHRYSLER D350		83	71-03005			N00070	200
N62742	N00236		710200	KOVATCH KFT06		87	71-02759			N00070	200
N62742	N00236		732101	PIERCE FIRE MARSH		88	73-02944			N00070	
N62742	N00236		732101	PIERCE FIRE MARSH		88	73-02945			N00070	
N62742	N00236		732102	PIERCE FIRE TRK		88	73-02889			N00070	
N62742	N00236		732102	WALTER NB750WGG		84	73-02727			N00070	
N62742	N00242	Naval Base San Diego, CA	716000	AMERTEK CF4000L		90	71-02814			N00070	500
N62742	N00242		716000	AMERTEK CF4000L		90	71-02865			N00070	500
N62742	N00242		716000	AMERTEK CF4000L		90	71-02910			N00070	500
N62742	N00242		716001	AMERTEK CF4000L		90	71-02867			N00070	500
N62742	N00242		716001	AMERTEK CF4000L		90	71-02971			N00070	500
N62742	N00242		716001	AMERTEK CF4000L		90	71-02978			N00070	500
N62742	N00242		710202	CONESTOGACK-31003		85	71-02680			N00070	200
N62742	N00242		734100	EMER ONE SA495		94	73-01350			N00070	
N62742	N00242		734100	EMER ONE SA495		94	73-01351			N00070	
N62742	N00242		734100	EMER ONE SA495		95	73-01384			N00070	
N62742	N00242		732100	EMER ONE T170		96	73-01438			N00070	
N62742	N00242		734102	FIRE-TEC WF430/250P		80	73-02645			N00070	
N62742	N00242		734102	FIRE TRKS		78	73-02556			N00070	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N00242	Naval Base San Diego, CA	735101	FIRE TRKSCFN5-3325		80	73-02606			N00070	
N62742	N00242		734102	GMC TRK UNKNOWN		80	73-02618			N00070	
N62742	N00242		722500	HEIL F6		56	72-01563			N00070	
N62742	N00242		732100	KAITLIN 1000B		83	73-02992			N00070	
N62742	N00242		732100	KAITLIN N-WLTD-1000		83	73-02993			N00070	
N62742	N00242		732101	KAITLIN NWLID1000		82	73-02685			N00070	
N62742	N00242		732101	KAITLIN NWLID1000		82	73-02694			N00070	
N62742	N00242		732101	KAITLIN NWLID1000		82	73-02696			N00070	
N62742	N00242		710200	KOVATCH KFT-4		86	71-02717			N00070	200
N62742	N00242		732101	KOVATCH RENEGADE		94	73-01366			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		94	73-01368			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		94	73-01397			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		94	73-01398			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		94	73-01399			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		94	73-03132			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		95	73-01421			N00070	
N62742	N00242		732101	KOVATCH RENEGADE		95	73-01424			N00070	
N62742	N00242		732101	KOVATCH RENEGADE 12		95	73-01423			N00070	
N62742	N00242		732100	MCKERLIE M47C		72	73-02827			N00070	
N62742	N00242		719001	OSHKOSH IA-3000		92	71-02939			N00070	500
N62742	N00242		718000	OSHKOSH M1500		77	71-02475			N00070	
N62742	N00242		716001	OSHKOSH P-19		85	71-02693			N00070	500
N62742	N00242		716001	OSHKOSH P-19		85	71-02705			N00070	500
N62742	N00242		716001	OSHKOSH P-19		85	71-02708			N00070	500
N62742	N00242		716001	OSHKOSH P-19		87	71-02732			N00070	500
N62742	N00242		716001	OSHKOSH P19		85	71-02706			N00070	500
N62742	N00242		719001	OSHKOSH TA-3000		92	71-02987			N00070	500
N62742	N00242		732101	PIERCE F.MARSHALL		88	73-02877			N00070	
N62742	N00242		732101	PIERCE FIRE MARSH		86	73-02796			N00070	
N62742	N00242		732101	PIERCE FIRE MARSH		88	73-02946			N00070	
N62742	N00242		732101	PIERCE FIRE MARSH		88	73-02947			N00070	
N62742	N00242		732102	PIERCE P-ARROW		88	73-02881			N00070	
N62742	N00242		735101	PIERCE PIERCE		91	73-03020			N00070	
N62742	N00242		732101	PIERCE SUBURBAN		86	73-02834			N00070	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N00242	Naval Base San Diego, CA	740002	PIRSCH CSN6		85	74-00060			N00070	
N62742	N00242		732101	WALTER NB750WGG		84	73-02724			N00070	
N62742	N00242		732101	WALTER NB750WGG		84	73-02725			N00070	
N62742	N00251		740001	CANADIAN CFG2042		80	74-00055			N00024	
N62742	N00251		732102	FIRE TRKSCF53325500		80	73-02605			N00024	
N62742	N00251		732100	PIERCE DASH		87	73-02924			N00024	
N62742	N00251		732100	PIERCE DASH		95	73-01385			N00024	
N62742	N00251		732100	PIERCE DASL		94	73-01376			N00024	
N62742	N00253		732101	PIERCE F. MARSCHAL		88	73-02920			N00024	
N62742	N00253		732101	SEAGRAVE		78	73-02523			N00024	
N62742	N00406		732101	FWD MB23098		78	73-02512			N00023	
N62742	N00406		733000	ISOMETRIC1700		76	73-03062			N00023	
N62742	N00406		732101	PIERCE PIERCE		88	73-02948			N00023	
N62742	N00406		750000	UNKNOWN HIRED GUN		88	75-00371			N00023	
N62742	N00620	NAS Whidbey Island	716000	AMERTEK CF4000L		90	71-02863			N00070	500
N62742	N00620		716001	AMERTEK CF4000L		90	71-02955			N00070	500
N62742	N00620		716001	AMERTEK CF4000L		92	71-02905			N00070	500
N62742	N00620		716001	AMERTEK CF400L		92	71-02901			N00070	500
N62742	N00620		710200	CHRYSLER D-350		84	71-03007			N00070	200
N62742	N00620		710201	CHRYSLER W400		77	71-02502		****	N00070	0
N62742	N00620		734102	FIRE TRKSAP2850500		78	73-02551			N00070	
N62742	N00620		734102	FIRE TRKSFTIAP285050		78	73-02552			N00070	
N62742	N00620		734102	GLOBAL W500/2509		88	73-02824			N00070	
N62742	N00620		732100	GSE/CORP MK1856		68	73-02046			N00070	
N62742	N00620		722500	JEEP CORPM52-A2/ME1A		68	72-01528			N00070	
N62742	N00620		732101	KAITLIN NWLID1000		82	73-02700			N00070	
N62742	N00620		710202	KOVATCH KFT-4		86	71-02718			N00070	200
N62742	N00620		732101	KOVATCH REGNEGADE M		94	73-01401			N00070	
N62742	N00620		718000	OSHKOSH A/S32P-4A		77	71-02480			N00070	
N62742	N00620		716001	OSHKOSH P-19		87	71-02731			N00070	500
N62742	N00620		732102	PIERCE SUBURBAN		86	73-02792			N00070	
N62742	N00620		735100	PIERCE TELESQURT		91	73-03023			N00070	
N62742	N00886		732101	PIERCE PIERCE ARRO		88	73-02949			N00063	
N62742	N00886		732101	SEAGRAVE		78	73-02531			N00063	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N0534A	Pacific Missile Range Facility	716001	AMERTEK CF4000L		92	71-02913			N00070	500
N62742	N0534A		710201	CHRYSLER W400		79	71-02580			N00070	200
N62742	N0534A		732100	ENGINEER		75	73-02398			N00070	
N62742	N0534A		710202	FIRE-BANN4800		95	71-03022			N00070	
N62742	N0534A		734100	FIRE TRKSFTI500-600		71	73-02332			N00070	
N62742	N0534A		732101	KOVATCH RENEGADE		94	73-01402			N00070	
N62742	N0534A		734100	NAVISTAR L700		74	73-01375			N00070	
N62742	N0534A		716001	OSHKOSH P-19		85	71-02710			N00070	500
N62742	N0534A		716001	OSHKOSH P-19		87	71-02738			N00070	500
N62742	N0534A		732101	WALTER NB750WGG		83	73-02744			N00070	
N62742	N32778		734102	FIRE-TEC WF430250P		80	73-02623			N00070	
N62742	N32778		734102	FIRE-TEC WF430250P		80	73-02625			N00070	
N62742	N32778		732100	FWD MB23098		78	73-02541			N00070	
N62742	N32778		732101	PIERCE SUBURBAN		86	73-02806			N00070	
N62742	N60028	NS Treasure island	710200	CHRYSLER D-350		84	71-03011			N00070	200
N62742	N60028		732100	FIRE TRKS750MC		69	73-02242			N00070	
N62742	N60028		732100	FIRE TRKS750MC		69	73-02244			N00070	
N62742	N60028		732100	FWD MB23098		78	73-02533			N00070	
N62742	N60028		732101	KAITLIN NWLID1000		82	73-02695			N00070	
N62742	N60028		732100	PIERCE DASH		86	73-02833			N00070	
N62742	N60036		734100	ENGINEER FT750		73	73-03087			N00024	
N62742	N60036		732101	KAITLIN NWLTD1000		82	73-02701			N00024	
N62742	N60036		735101	PIERCE PIERCE ARRO		88	73-02986			N00024	
N62742	N60036		732102	PIERCE UNKNOWN		88	73-02861			N00024	
N62742	N60036		734103	UNKNOWN GM CK31003		93	73-03124			N00024	
N62742	N60036		734103	UNKNOWN GM CK31003		93	73-03125			N00024	
N62742	N60042	NAF El Centro	716001	AMERTEK CF-4000		90	71-02946			N00070	500
N62742	N60042		716000	AMERTEK CF-4000		91	71-02899			N00070	500
N62742	N60042		716001	AMERTEK CF-4000		91	71-02924			N00070	500
N62742	N60042		716000	AMERTEK CF 4000L		91	71-02806			N00070	500
N62742	N60042		732100	FIRE TRKSFT12500500		75	73-02462			N00070	
N62742	N60042		710200	KOVATCH KFT06		87	71-02764			N00070	200
N62742	N60042		732101	KOVATCH RENEGADE		94	73-01404			N00070	
N62742	N60258		732100	FWD		78	73-02503			N00024	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N60258		732102	PIERCE 88		88	73-02879			N00024	
N62742	N60258		740001	PIERCE ARROW		89	74-00063			N00024	
N62742	N60258		732102	PIERCE FIRE APPARA		86	73-02795			N00024	
N62742	N60462	NAF ADAK	716000	AMERTEK CF 4000L		90	71-02858			N00070	500
N62742	N60462		716000	AMERTEK CF4000L		90	71-02859			N00070	500
N62742	N60462		716000	AMERTEK CF4000L		91	71-02857			N00070	500
N62742	N60462		732101	FIRE TRKSFTI2500-500		75	73-02477			N00070	
N62742	N60462		732101	PIERCE E-3106-08		86	73-02798			N00070	
N62742	N60462		732101	PIERCE FIRE MARSH		88	73-02888			N00070	
N62742	N60462		732101	PIERCE SUBURBAN		86	73-02818			N00070	
N62742	N60495	NAS Fallon	716001	AMERTEK CF4000L		92	71-02895			N00070	500
N62742	N60495		716001	AMERTEK CF4000L		92	71-02923			N00070	500
N62742	N60495		716001	AMERTEK CF4000L		93	71-02980			N00070	500
N62742	N60495		710200	CHRYSLER D-350		84	71-03008			N00070	200
N62742	N60495		710201	FIRE-TEC W400		78	71-02497			N00070	200
N62742	N60495		734100	FORD E-350		93	73-03110			N00070	
N62742	N60495		722500	INTL		65	72-01543			N00070	
N62742	N60495		732101	KOVATCH RENEGADE		94	73-01405			N00070	
N62742	N60495		719001	OSHKOSH TA-3000		93	71-03028			N00070	500
N62742	N60495		735101	PIERCE 5001 AB		94	73-03119			N00070	
N62742	N60495		732102	PIERCE SUBURBAN		86	73-02794			N00070	
N62742	N60530	NAWC China Lake	716001	AMERTEK CF4000L		92	71-02956			N00019	500
N62742	N60530		716001	AMERTEK CF400L		93	71-03004			N00019	500
N62742	N60530		710200	CHRYSLER W-400		77	71-02514			N00019	200
N62742	N60530		732100	FIRE TRKS2270500		74	73-02443			N00019	
N62742	N60530		732100	FIRE TRKSFTI-2500		76	73-02495			N00019	
N62742	N60530		716001	OSHKOSH P19		85	71-02711			N00019	500
N62742	N60530		732102	PIERCE FIRE RESCUE		88	73-02988			N00019	
N62742	N60530		732102	WALTER NB-750-WGG		84	73-02770			N00019	
N62742	N60530		732102	WALTER NB-750-WGG		84	73-02771			N00019	
N62742	N60701		732100	FIRE TRKS2500 500		75	73-02456			N00024	
N62742	N60701		732101	KAITLIN N1044		82	73-02684			N00024	
N62742	N60701		732101	PIERCE F. MARSCALL		87	73-02921			N00024	
N62742	N60701		732102	PIERCE SUBURBAN		86	73-02822			N00024	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N61581		732100	FIRE TRKS2500500		76	73-02476			N00070	
N62742	N61581		732101	FIRE TRKSFTI3325-500		80	73-02588			N00070	
N62742	N61581		740000	FIRE TRKSTL2849		79	74-00046			N00070	
N62742	N61581		732101	FWD MB23098		78	73-02537			N00070	
N62742	N61581		732101	FWD MB23098		78	73-02538			N00070	
N62742	N61581		732101	KOVATCH RENEGADE		95	73-01422			N00070	
N62742	N61581		732101	KOVATCH RENEGADE		95	73-01433			N00070	
N62742	N61581		732100	MORITA MCD20MM01		88	73-02909			N00070	
N62742	N61581		732100	MORITA MCD20MM01		88	73-02910			N00070	
N62742	N61581		732100	MORITA MCD20MM01		88	73-02911			N00070	
N62742	N61581		732100	MORITA MCD20MM01		88	73-02912			N00070	
N62742	N61581		732100	MORITA MCD20MM01		88	73-02913			N00070	
N62742	N61581		732100	MORITA MCD20MM03		90	73-03044			N00070	
N62742	N61581		732100	MORITA MCD20MM03		90	73-03045			N00070	
N62742	N61581		732100	MORITA MCD20MM03		90	73-03046			N00070	
N62742	N61581		732100	MORITA MCD20MM05		93	73-03090			N00070	
N62742	N61581		732100	MORITA MCD20MM05		93	73-03100			N00070	
N62742	N61581		732100	MORITA MCD20MM05		95	73-01426			N00070	
N62742	N61581		732101	PIERCE ARROW		88	73-02884			N00070	
N62742	N61581		732101	PIERCE DASH		86	73-02807			N00070	
N62742	N61581		732101	PIERCE DASH		86	73-02836			N00070	
N62742	N61581		732101	WALTER NB750WGG		84	73-02749			N00070	
N62742	N61581		732101	WALTER NB750WGG		84	73-02750			N00070	
N62742	N61581		732101	WALTER NB750WGG		84	73-02751			N00070	
N62742	N61755		732100	FIRE TRKSCF53325		80	73-02593			N00070	
N62742	N61755		732101	KOVATCH RENEGADE		94	73-01407			N00070	
N62742	N61755		732101	PIERCE ARROW		88	73-02894			N00070	
N62742	N61755		732101	PIERCE SUBURBAB		86	73-02832			N00070	
N62742	N61755		732101	PIERCE SUBURBAN		86	73-02810			N00070	
N62742	N61755		732101	PIERCE SUBURBAN		86	73-02811			N00070	
N62742	N61755		732101	PIERCE SUBURBAN		86	73-02837			N00070	
N62742	N61755		732101	PIERCE SUBURBAN		86	73-02838			N00070	
N62742	N61755		732101	WALTER NB750WGG		85	73-02718			N00070	
N62742	N61755		732101	WALTER NB750WGG		85	73-02765			N00070	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N62271		732101	FWD MR23098		78	73-02513			N00011	
N62742	N62271		732101	PIERCE 1000 GPM		88	73-02942			N00011	
N62742	N62271		732101	PIERCE F MARSHALL		88	73-02890			N00011	
N62742	N62474		740001	CANADIAN CFC2042		80	74-00056			N00025	
N62742	N62474		732102	FIRE TRKSFTI2500-500		76	73-02483			N00025	
N62742	N62474		732100	GMC 6500		72	73-02918			N00025	
N62742	N62474		734102	GMC TRK FTIAT250500		79	73-02548			N00025	
N62742	N62474		732102	PIERCE DASH		86	73-02844			N00025	
N62742	N62474		732102	PIERCE DASH		88	73-02900			N00025	
N62742	N62474		732102	PIERCE GMC		88	73-02901			N00025	
N62742	N62474		732100	PIERCE PIERCE		88	73-02899			N00025	
N62742	N62474		732100	SEAGRAVE MB23098		78	73-02510			N00025	
N62742	N62474		732100	SEAGRAVE MB23098		78	73-02532			N00025	
N62742	N62494	NAF Midway Island	732100	FIRE TRKS750MC		66	73-01907			N00025	
N62742	N62494		732100	FIRE TRKS750MC		66	73-01911			N00025	
N62742	N62494		723000	GIBSON		75	72-01558			N00025	
N62742	N62494		710202	KOVATCH KFT4		86	71-02719			N00025	200
N62742	N62494		716000	OSHKOSH A1717		71	71-02205			N00025	
N62742	N62494		718000	OSHKOSH M1500		77	71-02473			N00025	
N62742	N62494		716001	OSHKOSH P19		87	71-02745			N00025	500
N62742	N62494		716001	OSHKOSH P19		87	71-02746			N00025	500
N62742	N62583		732102	FIRE TRKSCF53325500		80	73-02600			N00025	
N62742	N62583		732102	PIERCE ARROW		88	73-02891			N00025	
N62742	N62583		735101	PIERCE ARROW		94	73-03099			N00025	
N62742	N62735		732101	KOVATCH RENEGADE		94	73-01386			N00070	
N62742	N62735		732100	MORITA MCD20MM		88	73-02914			N00070	
N62742	N62735		732100	MORITA MCD20MM		88	73-02915			N00070	
N62742	N62735		732100	MORITA MCD20MM		88	73-02916			N00070	
N62742	N62735		732100	MORITA MCD20MM		90	73-03047			N00070	
N62742	N62735		732100	NAVSTR R1856		67	73-01951			N00070	
N62742	N62735		740001	PIERCE ARROW		93	74-00069			N00070	
N62742	N62735		732101	PIERCE SUBURBAN		86	73-02812			N00070	
N62742	N62735		732101	PIERCE SUBURBAN		86	73-02841			N00070	
N62742	N62735		732101	WALTER NB750WGG		84	73-02742			N00070	

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TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N62813	NS Pearl Harbor, HI	716000	AMERTEK CF4000L		92	71-02845			N00070	500
N62742	N62813		716001	AMERTEK CF4000L		92	71-02819			N00070	500
N62742	N62813		716001	AMERTEK CF4000L		92	71-02846			N00070	500
N62742	N62813		716001	AMERTEK CF4000L		93	71-02968			N00070	500
N62742	N62813		710202	CONESTOGA45152		85	71-02667			N00070	200
N62742	N62813		710202	CONESTOGA45152		85	71-02715			N00070	200
N62742	N62813		733000	EAST TECHX10		87	73-02850			N00070	
N62742	N62813		732100	ENGINEER FT750		73	73-03082			N00070	
N62742	N62813		732101	FIRE TRKSCF-5-3325		80	73-02596			N00070	
N62742	N62813		732101	FIRE TRKSCFG2042		80	73-02599			N00070	
N62742	N62813		732101	FIRE TRKSFTP-CF3325-		80	73-02598			N00070	
N62742	N62813		732100	FWD MB23098		78	73-02540			N00070	
N62742	N62813		732100	JEEP CORPFT750		73	73-02677			N00070	
N62742	N62813		732100	JEEP CORPFT750		73	73-02678			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		94	73-01409			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		94	73-01410			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		94	73-01411			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		94	73-01412			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		94	73-01413			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		95	73-01367			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		95	73-01369			N00070	
N62742	N62813		732101	KOVATCH RENEGADE		95	73-01370			N00070	
N62742	N62813		722500	LTV AMGENW15B9109		69	72-01592			N00070	
N62742	N62813		716001	OSHKOSH P-19		85	71-02698			N00070	500
N62742	N62813		716001	OSHKOSH P-19		85	71-02699			N00070	500
N62742	N62813		732101	PIERCE ARROW		88	73-02893			N00070	
N62742	N62813		732101	PIERCE ARROW		88	73-02950			N00070	
N62742	N62813		732101	PIERCE ARROW		88	73-02974			N00070	
N62742	N62813		732101	PIERCE ARROW		88	73-02984			N00070	
N62742	N62813		735101	PIERCE ARROW		94	73-03101			N00070	
N62742	N62813		732101	PIERCE DASH		86	73-02799			N00070	
N62742	N62813		732101	PIERCE DASH		86	73-02800			N00070	
N62742	N62813		732101	PIERCE DASH		86	73-02802			N00070	
N62742	N62813		732102	PIERCE DASH		86	73-02801			N00070	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N62813	NS Pearl Harbor, HI	732101	WALTER NB750WGG		83	73-02743			N00070	
N62742	N62813		732101	WALTER NB750WGG		83	73-02745			N00070	
N62742	N63042	NAS LeMoore	716001	AMERTEK CF4000L		90	71-02897			N00070	500
N62742	N63042		716001	AMERTEK CF4000L		91	71-02813			N00070	500
N62742	N63042		716001	AMERTEK CF4000L		92	71-02920			N00070	500
N62742	N63042		716001	AMERTEK CF4000L		92	71-02944			N00070	500
N62742	N63042		710200	CHRYSLER D-350		84	71-03009			N00070	200
N62742	N63042		710200	KOVATCH KFT06		87	71-02773			N00070	200
N62742	N63042		732101	KOVATCH RENEGADE		94	73-03133			N00070	
N62742	N63042		732102	PIERCE SUBURBAN		86	73-02793			N00070	
N62742	N63042		735101	PIERCE TSQT50A		94	73-03120			N00070	
		Pacific Missile Test Center									
N62742	N63126	Pt. Mugu	716000	AMERTEK CF4000L		90	71-02810			N00019	500
N62742	N63126		716000	AMERTEK CF4000L		92	71-02964			N00019	500
N62742	N63126		716000	AMERTEK FIRE TRK		92	71-02915			N00019	
N62742	N63126		716000	AMERTEK FIRE TRK		92	71-02983			N00019	
N62742	N63126		710200	FORD MTR F800		95	71-03060			N00019	200
N62742	N63126		710200	FORD MTR F800		95	71-03061			N00019	200
N62742	N63126		732100	FWD		78	73-02520			N00019	
N62742	N63126		734100	GMC TOPKICK		95	73-01378			N00019	
N62742	N63126		716001	OSHKOSH P19		85	71-02713			N00019	500
N62742	N63126		716001	OSHKOSH P19		87	71-02752			N00019	500
N62742	N63126		716001	OSHKOSH P19		87	71-02753			N00019	500
N62742	N63126		732100	PIERCE ARROW 40 TS		87	73-02935			N00019	
N62742	N63126		730000	PIERCE HDR-WI		95	73-01383			N00019	
N62742	N63126		732100	PIERCE SUBURBAN		86	73-02830			N00019	
N62742	N63126		732101	PIERCE SUBURBAN		87	73-02867			N00019	
N62742	N63126		732101	PIERCE SUBURBAN		87	73-02868			N00019	
N62742	N64267		732100	FIRE TRKS750MC		69	73-02136			N00024	
N62742	N64267		734101	FIRE TRKSCS0500		86	73-02828			N00024	
N62742	N64267		732102	PIERCE SUBURBAN		86	73-02819			N00024	
N62742	N68436		734102	FIRE-TEC WF430250P		80	73-02643			N00070	
N62742	N68436		732100	FIRE TRKSFTI2500-500		76	73-02489			N00070	
N62742	N68436		735101	PIERCE ARROW		94	73-03105			N00070	

List of NAVY Crash Fire Rescue (CFR) Inventory

TEMC	UIC	Activity (Location)	EU (EC)	Make & Model No.	Status	Yr.	USN	Repl. Yr.	Cost	MC	Lbs. of 1211
N62742	N68436		732102	PIERCE FIRE MARSH		88	73-02880			N00070	
N62742	N68436		732102	PIERCE PIERCE ARRO		88	73-02872			N00070	
N62742	N68436		732102	PIERCE U00000		86	73-02797			N00070	
N62742	N68539	Diego Garcia	734102	FIRE-TEC WF430250P		80	73-02613			N00070	
N62742	N68539		710200	KOVATCH KFT-6		87	71-02774			N00070	200
N62742	N68539		716001	OSHKOSH P19		87	71-02750			N00070	500
N62742	N68539		719001	OSHKOSH TA-3000		92	71-02992			N00070	500
N62742	N68539		719001	OSHKOSH TA3000		92	71-02927			N00070	500
N62742	N68539		719001	OSHKOSH TA3000		92	71-02999			N00070	500
N62742	N68539		732101	PIERCE PIERCE AROW		88	73-02903			N00070	
N62742	N68539		732101	PIERCE PIERCE DASH		91	73-01359			N00070	
N62742	N68660		734102	FIRE-TEC WF430250P		80	73-02615			N00063	
N62742	N68967		735101	PIERCE ARROW		94	73-03118			N00070	
N62742	N68967		732101	PIERCE SUBURBAN		86	73-02835			N00070	
N62742	N68967		732101	WALTER NB750WGG		84	73-02730			N00070	

TOTAL 1211	**108300**
ATL 1211	73900
CHES 1211	900
PAC 1211	33500
cross check tot	108300

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Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Atlantic Division

UIC	Activity (Location)	EU (EC)	YR	Make & Model Number	LBS of 1211	Stat	Repl YR	Cost	USN	MC
N00101	NAS S. Weymouth	716001	91	AMERTEK CF4000L	0	Y	1999	$174,360	71-02860	N00072
		716001	92	AMERTEK CF4000L	0	Y	2000	$174,360	71-02914	N00072
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02682	N00072
N00109	NWS Yorktown	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02691	N00024
N00158	NAS Willow Grove	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02942	N00072
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02898	N00072
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02982	N00072
		710201	87	KOVATCH KFT6	200	O	1994	$81,864	71-02756	N00072
		716001	86	OSHKOSH P-19	500	O	1994	$174,360	71-02683	N00072
N00171	Naval District Washington	716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02800	N00011
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02801	N00011
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02803	N00011
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02703	N00011
N00178	NSWC Dahlgren	716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02947	N00024
N00204	NAS Pensacola	716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02811	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02816	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02864	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02912	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02916	N00062
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-02866	N00062
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-02963	N00062
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-02974	N00062
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-03003	N00062
		710200	88	MAXIM X-CR	200	O	1995	$73,560	71-02791	N00062
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02694	N00062
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02704	N00062
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02726	N00062
N00206	NAS New Orleans	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02922	N00072
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02962	N00072
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02975	N00072
N00207	NAS Jacksonville	716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02847	N00060
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02945	N00060
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02951	N00060
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02953	N00060
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-02977	N00060
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-02979	N00060
		710200	78	CHRYSLER W400	0	P	1985	$73,560	71-02527	N00060
		710202	85	CONESTOGACK 31003	200	O	1992	$72,924	71-02670	N00060

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Atlantic Division

UIC	Activity (Location)	EU (EC)	YR	Make & Model Number	LBS of 1211	Stat	Repl YR	Cost	USN	MC
N00210	NTC Great Lakes	710202	87	KOVATCH KFT6	200	O	1994	$73,924	71-02755	N00062
N00213	NAS Key West	716001	86	OSHKOSH P-19	500	O	1994	$174,360	71-02688	N00060
		716000	87	OSHKOSH P-19	500	O	1995	$200,000	71-02735	N00060
		716001	87	OSHKOSH P-19	0	H	1995	$174,360	71-02729	N00060
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02730	N00060
N00216	NAS Corpus Christi	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02894	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02904	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02948	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02957	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02966	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02969	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02973	N00062
N00275	NAS Glenview	716000	85	OSHKOSH P-19	500	O	1993	$200,000	71-02709	N00025
N00389	NS Roosevelt Roads	710200	87	KOVATCH KFT6	200	O	1994	$73,560	71-02770	N00060
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02740	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02929	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02932	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02938	N00060
N00421	NAWC Paxtuxent River	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02697	N00019
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02701	N00019
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02728	N00019
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02936	N00019
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02995	N00019
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02996	N00019
N00639	NSA Memphis Millington	710200	87	KOVATCH KFT6	200	O	1994	$73,560	71-02772	N00062
		716000	85	OSHKOSH P-19	0	Y	1993	$200,000	71-02689	N00062
		716001	87	OSHKOSH P-19	0	Y	1995	$174,360	71-02736	N00062
		716001	87	OSHKOSH P-19	0	Y	1995	$174,360	71-02737	N00062
N60087	NAS Brunswick	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02907	N00060
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02970	N00060
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02861	N00060
N60191	NAS Oceana	716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02804	N00060
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02809	N00060
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02817	N00060
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02896	N00060
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02911	N00060
		716001	93	AMERTEK CF4000L	500	O	2001	$174,360	71-02958	N00060
		716001	93	AMERTEK CF4000L	500	O	2001	$710,959	71-02959	N00060

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Atlantic Division

UIC	Activity (Location)	EU (EC)	YR	Make & Model Number	LBS of 1211	Stat	Repl YR	Cost	USN	MC
N60200	NAS Cecil Field	716001	90	AMERTEK CF4000L	0	Y	1998	$174,360	71-02805	N00060
		716001	90	AMERTEK CF4000L	0	Y	1998	$174,360	71-02818	N00060
		716001	90	AMERTEK CF4000L	0	Y	1998	$174,360	71-02902	N00060
		716001	90	AMERTEK CF4000L	0	Y	1998	$174,360	71-02917	N00060
		716001	91	AMERTEK CF4000L	0	Y	1999	$174,360	71-02812	N00060
		716001	93	AMERTEK CF4000L	0	Y	2001	$174,360	71-02926	N00060
		716001	93	AMERTEK CF4000L	0	Y	2001	$174,360	71-02954	N00060
		710200	77	CHRYSLER W-40	200	O	1984	$73,560	71-02503	N00060
N60201	NS Mayport	716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02741	N00060
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02742	N00060
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02751	N00060
N60241	NAS Kingsville	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02949	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02967	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02862	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02903	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02909	N00062
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02960	N00062
N60508	NAS Whiting Field, Milton	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02908	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02952	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02972	N00062
		716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02976	N00062
		710202	83	FIRE-TEC CK30943	200	O	1990	$73,924	71-02637	N00062
		710202	83	FIRE-TEC CK30943	200	O	1990	$73,924	71-02638	N00062
		710202	83	FIRE-TEC CK30943	200	O	1990	$73,924	71-02639	N00062
		710202	83	FIRE-TEC CK30943	200	O	1990	$73,924	71-02641	N00062
		710202	83	FIRE-TEC CK30943	200	O	1990	$73,924	71-02642	N00062
		710202	85	GMC CHEV CK31003	200	O	1992	$73,924	71-02677	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02775	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02776	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02777	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02778	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02779	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02780	N00062
		710200	87	GMC CHEV KFT6	200	O	1994	$73,560	71-02781	N00062
		710202	88	GMC CHEV X-CR	200	O	1995	$73,924	71-02787	N00062
		710202	88	GMC CHEV X-CR	200	O	1995	$73,924	71-02788	N00062
		710202	88	GMC CHEV X-CR	200	O	1995	$73,924	71-02789	N00062

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Atlantic Division

UIC	Activity (Location)	EU (EC)	YR	Make & Model Number	LBS of 1211	Stat	Repl YR	Cost	USN	MC
N61331	NSWC Panama City	716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02743	N00024
N61414	NAB Little Creek	710200	86	KOVATCH KFT4	200	O	1993	$73,560	71-02720	N00060
N62588	NSA Naples	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02695	N00061
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02696	N00061
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02747	N00061
N62661	NETC Newport	710202	85	GMC CHEV CK30	200	O	1992	$73,924	71-02679	N00062
N62688	NS Norfolk	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02687	N00060
		716001	86	OSHKOSH P-19	500	O	1994	$174,360	71-02692	N00060
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02748	N00060
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02749	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02930	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02937	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02990	N00060
N62863	NS Rota	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02684	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02933	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02940	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02991	N00061
N62995	NAS Sigonella	716000	85	OSHKOSH P-19	500	O	1993	$200,000	71-02686	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02934	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02941	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02989	N00061
N63032	NAS Keflavik	710200	83	FIRE-TEC DC15	200	O	1990	$73,560	71-03014	N00060
		710200	95	FORD MTR F-400	0	E	2002	$73,560	71-03024	N00060
		710200	87	GMC TRK CK1003	200	O	1994	$73,560	71-02760	N00060
		710200	83	NAVISTAR 1854	200	O	1990	$73,560	71-02985	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02928	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02935	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02988	N00060
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-02994	N00060
N63043	NAS Meridian	716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02802	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02848	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02855	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02856	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02900	N00062
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02918	N00062
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02943	N00062
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02965	N00062

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Atlantic Division

UIC	Activity (Location)	EU (EC)	YR	Make & Model Number	LBS of 1211	Stat	Repl YR	Cost	USN	MC
N63821	NUWC Andros Island	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02702	N00024
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02734	N00024
N66691	NSA Souda Bay	710200	84	CHEV AS32	200	O	1991	$73,560	71-03084	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-03000	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-03001	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-03002	N00061
		719001	92	OSHKOSH TA3000	500	O	2004	$329,496	71-03027	N00061
N68335	NAWC Lakehurst	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02712	N00019
		716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02714	N00019
		716001	86	OSHKOSH P-19	500	O	1994	$174,360	71-02722	N00019
		716001	87	OSHKOSH P-19	500	O	1995	$174,360	71-02782	N00019
N83447	NAS Fort Worth	716001	90	AMERTEK CF4000L	500	O	1998	$174,360	71-02961	N00072
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02808	N00072
		716001	91	AMERTEK CF4000L	500	O	1999	$174,360	71-02815	N00072
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02906	N00072
		716001	92	AMERTEK CF4000L	500	O	2000	$174,360	71-02950	N00072
N92782	NWIRP Bloomfield	716001	85	OSHKOSH P-19	500	O	1993	$174,360	71-02690	N00019
N68860	NSC Pensacola	710200	82	CHEV CK31403	200	O	1989	$73,560	73-03052	N00023
		710200	79	FORD MOTRF600	200	O	1986	$73,560	73-02670	N00023
		716000	86	OSHKOSH P-19	500	O	1994	$200,000	71-02796	N00023

TOTAL LBS HALON 1211- ATL	68400
TOTAL LBS HALON 1211- PAC	33500
TOTAL LBS HALON 1211	**101900**

Appendix D - Resulting Inventory

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Pacific Division

UIC	Activity (Location)	EU (EC)	Yr.	Make & Model No.	Lbs. of 1211	Stat.	Repl. Yr.	Cost	USN	MC
N00236	NAS Alameda	716001	91	AMERTEK CF4000L	500				71-02807	N00070
		716001	92	AMERTEK CF4000L	500				71-02919	N00070
		716001	92	AMERTEK CF4000L	500				71-02921	N00070
		710200	83	CHRYSLER D350	200				71-03005	N00070
		710200	87	KOVATCH KFT06	200				71-02759	N00070
N00242	Naval Base San Diego	716000	90	AMERTEK CF4000L	500				71-02814	N00070
		716000	90	AMERTEK CF4000L	500				71-02865	N00070
		716000	90	AMERTEK CF4000L	500				71-02910	N00070
		716001	90	AMERTEK CF4000L	500				71-02867	N00070
		716001	90	AMERTEK CF4000L	500				71-02971	N00070
		716001	90	AMERTEK CF4000L	500				71-02978	N00070
		710202	85	CONESTOGACK-31003	200				71-02680	N00070
		710200	86	KOVATCH KFT-4	200				71-02717	N00070
		719001	92	OSHKOSH IA-3000	500				71-02939	N00070
		716001	85	OSHKOSH P-19	500				71-02693	N00070
		716001	85	OSHKOSH P-19	500				71-02705	N00070
		716001	85	OSHKOSH P-19	500				71-02708	N00070
		716001	87	OSHKOSH P-19	500				71-02732	N00070
		716001	85	OSHKOSH P19	500				71-02706	N00070
		719001	92	OSHKOSH TA-3000	500				71-02987	N00070
N00620	NAS Whidbey Island	716000	90	AMERTEK CF4000L	500				71-02863	N00070
		716001	90	AMERTEK CF4000L	500				71-02955	N00070
		716001	92	AMERTEK CF4000L	500				71-02905	N00070
		716001	92	AMERTEK CF400L	500				71-02901	N00070
		710200	84	CHRYSLER D-350	200				71-03007	N00070
		710201	77	CHRYSLER W400	0	H			71-02502	N00070
		710202	86	KOVATCH KFT-4	200				71-02718	N00070
		716001	87	OSHKOSH P-19	500				71-02731	N00070
N0534A	Pacific Missile Range Facility	716001	92	AMERTEK CF4000L	500				71-02913	N00070
		710201	79	CHRYSLER W400	200				71-02580	N00070
		716001	85	OSHKOSH P-19	500				71-02710	N00070
		716001	87	OSHKOSH P-19	500				71-02738	N00070
N60028	NS Treasure island	710200	84	CHRYSLER D-350	200				71-03011	N00070

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Pacific Division

UIC	Activity (Location)	EU (EC)	Yr.	Make & Model No.	Lbs. of 1211	Stat.	Repl. Yr.	Cost	USN	MC
N60042	NAF El Centro	716001	90	AMERTEK CF-4000	500				71-02946	N00070
		716000	91	AMERTEK CF-4000	500				71-02899	N00070
		716001	91	AMERTEK CF-4000	500				71-02924	N00070
		716000	91	AMERTEK CF 4000L	500				71-02806	N00070
		710200	87	KOVATCH KFT06	200				71-02764	N00070
N60462	NAF ADAK	716000	90	AMERTEK CF 4000L	500				71-02858	N00070
		716000	90	AMERTEK CF4000L	500				71-02859	N00070
		716000	91	AMERTEK CF4000L	500				71-02857	N00070
N60495	NAS Fallon	716001	92	AMERTEK CF4000L	500				71-02895	N00070
		716001	92	AMERTEK CF4000L	500				71-02923	N00070
		716001	93	AMERTEK CF4000L	500				71-02980	N00070
		710200	84	CHRYSLER D-350	200				71-03008	N00070
		710201	78	FIRE-TEC W400	200				71-02497	N00070
		719001	93	OSHKOSH TA-3000	500				71-03028	N00070
N60530	NAWC China Lake	716001	92	AMERTEK CF4000L	500				71-02956	N00019
		716001	93	AMERTEK CF400L	500				71-03004	N00019
		710200	77	CHRYSLER W-400	200				71-02514	N00019
		716001	85	OSHKOSH P19	500				71-02711	N00019
N62494	NAF Midway Island	710202	86	KOVATCH KFT4	200				71-02719	N00025
		716001	87	OSHKOSH P19	500				71-02745	N00025
		716001	87	OSHKOSH P19	500				71-02746	N00025
N62813	NS Pearl Harbor, HI	716000	92	AMERTEK CF4000L	500				71-02845	N00070
		716001	92	AMERTEK CF4000L	500				71-02819	N00070
		716001	92	AMERTEK CF4000L	500				71-02846	N00070
		716001	93	AMERTEK CF4000L	500				71-02968	N00070
		710202	85	CONESTOGA45152	200				71-02667	N00070
		710202	85	CONESTOGA45152	200				71-02715	N00070
		716001	85	OSHKOSH P-19	500				71-02698	N00070
		716001	85	OSHKOSH P-19	500				71-02699	N00070
N63042	NAS LeMoore	716001	90	AMERTEK CF4000L	500				71-02897	N00070
		716001	91	AMERTEK CF4000L	500				71-02813	N00070
		716001	92	AMERTEK CF4000L	500				71-02920	N00070
		716001	92	AMERTEK CF4000L	500				71-02944	N00070
		710200	84	CHRYSLER D-350	200				71-03009	N00070
		710200	87	KOVATCH KFT06	200				71-02773	N00070

Crash Fire and Rescue (CFR) Equipment
Halon 1211 Containing Equipment
Pacific Division

UIC	Activity (Location)	EU (EC)	Yr.	Make & Model No.	Lbs. of 1211	Stat.	Repl. Yr.	Cost	USN	MC
N63126	Pacific Missile Test Center Pt. Mugu	716000	90	AMERTEK CF4000L	500				71-02810	N00019
		716000	92	AMERTEK CF4000L	500				71-02964	N00019
		710200	95	FORD MTR F800	200				71-03060	N00019
		710200	95	FORD MTR F800	200				71-03061	N00019
		716001	85	OSHKOSH P19	500				71-02713	N00019
		716001	87	OSHKOSH P19	500				71-02752	N00019
		716001	87	OSHKOSH P19	500				71-02753	N00019
N68539	Diego Garcia	710200	87	KOVATCH KFT-6	200				71-02774	N00070
		716001	87	OSHKOSH P19	500				71-02750	N00070
		719001	92	OSHKOSH TA-3000	500				71-02992	N00070
		719001	92	OSHKOSH TA3000	500				71-02927	N00070
		719001	92	OSHKOSH TA3000	500				71-02999	N00070

TOTAL LBS HALON 1211- PAC	33500
TOTAL LBS HALON 1211- ATL	*68400*
TOTAL LBS HALON 1211	**101900**